ANCIENT INDIA

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CONTENTS

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NOTES

THE Archaeological Survey of India as a Central organization completed fifty years of its continued existence in 1952, to be precise on the 21st February of that year. The event is no doubt worthy of commemoration, and to us the most suitable, if unpretentious, way of doing so has seemed to be the bringing out of a Special Number of our Bulletin, to contain articles on the progress of archaeological activities in the country during the last half-a-century.

This period is a sufficiently long one for a critical review of the achievements of an organization, the justification for its existence, the position it has attained in the cultural life of the country and the recognition it has won in the international sphere. What the verdict of such an appraisement will be is not for us to anticipate. In the following pages we have only indicated where we stand today after a striving for five decades through circumstances seldom affluent and at times definitely critical. It is not out of a feeling of self-approbation and complacence that we offer this Number to our readers; on the contrary, we desire our Jubilee to be the occasion for an assessment of our worth by the competent.

To ourselves, this is a moment for self-criticism and resolve. Let us look back and see in retrospect how far we have fulfilled our mission as the custodians of the national heritage of the land and whether we have risen to the standard the world demands of us. Let us also look forward to an age of increased opportunities, of greater activities and of still harder toil, always with the consciousness that what little has been done is only a fraction of what remains to be achieved.

* * * * *

After four decades of vacillation in plan and policy, in spite of which valuable work had been done, the second year of the present century witnessed the resuscitation of the Archaeological Survey of India in a new form and with the clear-cut purpose of survey, including exploration and excavation, preservation of monuments, epigraphical research and development of museums. The scope of the Survey was thus comprehensive, so much so that even after all these years' experience its four-fold function remains virtually unaltered. One may regret the lack of the specific inclusion of numismatic studies and search of ancient texts, but nothing in the prescribed aim precludes them; in fact, the output of the Survey in bringing to light and identifying coins and, to a more limited extent, manuscripts has been, to say the least, not negligible.

* * * * *

In the performance of its functions the Survey has not always been alone in the field, for other agencies have substantially contributed to progress. This is particularly true of Stone Age exploration, for prior to 1940, when the Survey organized a party for such exploration and thereby evinced, for the first time, its interest in palaeolithic field-work, all research had been done by interested officials of the Geological Survey of India and foreign explorers, either individually or working collectively. Even in subsequent days prehistoric studies have owned not a little to outside workers. In other explorations too the work of such individuals and organizations has been equally notable, particularly in the last five years or so, during which a limited number of Indian universities and learned institutions have extended their orbit and have, by the outcome of their fieldwork, materially helped in drawing the picture of Indian archaeology. It is a happy augury that their relation with the Survey has been one of perfect understanding and co-operation.

In the sphere of preservation of monuments, while the Survey has held the monopoly in regard to those over which it has assumed control, noteworthy were the efforts of some of the former Indian States in saving from ruin the monuments in their charge. If Sānchī has become symbolic of early Buddhist art, if the names of Ajaṇṭā and Ellora conjure before us visions of spiritual beauty, if the temples of Belur, Halebīḍ and Somanāthpur still stand as a testimony to the grandeur that was Hoysaḷa architecture, if the fabric of the monuments of Māṇḍu still holds together to bespeak the ancient glory of the 'city of joy', the credit goes to the enlightened interest taken in them by the respective States, which treasured them as it were as a trust, to be made over this year to the nation as 'monuments of national importance'.

Of the activities of the Survey, it is epigraphy that has most attracted scholars of Indian history, who have themselves made notable contributions in this direction. Indian epigraphy is no less indebted for its progress to such scholars, European and Indian, than to the Survey itself, which has, by its liberal policy of lending squeezes of inscriptions, encouraged them in their research.

In its earlier days the Survey organized several museums and either undertook to run them itself or made them over to the respective Provinces for being maintained as their own institutions. There is hardly any leading museum in the country which has not been indebted to the Survey in one way or another, in the form of help and advice in building up its archaeological section or, more concretely, of loan-collections and presents of antiquities and their treatment and preservation by scientific methods. The museums, except those directly controlled by the Survey itself, can now be said to have attained viability and are developing on individual lines. To say this is not to imply

that there has been a parting of ways; on the contrary, the same spirit of cordiality has persisted throughout.

The foregoing will indicate that while the Archaeological Survey has been the main organization of its kind in India, it has not always been ploughing its lonely furrow, for its activities have sometimes inspired and have been usefully supplemented by the efforts of sister-organizations and individuals. On the occasion of our Jubilee, it would be uncharitable to forget them and not to give them their due recognition.

* * * * *

The following pages chiefly comprise articles dealing with the main facets of the archaeological activities in the country during the last fifty years. They have been contributed by my colleagues, each competent to speak on the subject he has written upon. To them my thanks are due. To befit the occasion, these articles are prefaced by a history of Indian archaeology, covered in two articles, the first of them by Shri S. Roy, Assistant Director, National Archives of India. I am beholden to him for this article, which brings to light many unpublished facts.

* * * * *

While it has been our endeavour to state here what has been done by way of revealing India's past, it is not possible to lay down concretely what remains to be done. For, in the field of exploration and research all future work must necessarily be a progression from the known to the unknown. What we know today is indicated below; what will be known tomorrow is not possible to foresee. We can, therefore, only lay down as a general policy that it will be our primary objective to complete the general outline of the archaeological picture of India before trying to fill in, except incidentally, the detail of individual portions thereof. As a result of recent developments, we are confident that persistent efforts directed to this end will bear fruit.

At the same time our efforts will ever remain incomplete in results if we work in isolation, for that is detrimental to all research. At the present moment we feel the need for all-round collaboration more acutely than ever before. For example, we have to pursue what has been pointed out in a general way about the similarities of some Indian palaeolithic and mesolithic tool-types with those of Africa and Palestine. We have been told that smoothed stone celts of India were derived from the Far East rather than from the Middle East, but the implications of this theory on culture-contacts during Neolithic times and on the movements of the Austro-Asiatic people have to be explored. Further, it has to be explained whether the geographical and chronological gaps between the south Indian and western megaliths are due mainly to the lack of exploration in the intervening tracts or to more deep-seated causes. Again, it is vital to Indian archaeology to learn whether the material remains in India pertaining to the period that saw the immigration of the Aryans have analogues in the countries that they are believed to have traversed before they reached and settled in India. In these and many other directions do we look up for enlightenment to our fellow-explorers in the neighbouring lands, for pre-occupations in our own country may not allow us to undertake such investigations ourselves.

A. Ghosh

INDIAN ARCHAEOLOGY FROM JONES TO MARSHALL (1784-1902)

By SOURINDRANATH ROY

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NO spectacular event[1] comparable in its dramatic significance with either the discovery of the Rosetta Stone or the opening up of the lost city of Pompeii inaugurated the birth of archaeological studies in India. It had a much humbler and less sensational beginning, having received its first impulse from the somewhat amateurish efforts of an enthusiastic band of antiquarians, who, ably guided by Sir William Jones, formed, on the 15th January 1784, under the name of the Asiatic Society,[2] an institution for enquiring, among other things, 'into the History . . . the Antiquities, Arts, Sciences and Literatures of Asia'. There had been others in India before Sir William[3] devoting their spare time to the study of antiquities. But their efforts were mostly of a desultory character, and it is doubtful if their interest in antiquities was more than that of the dilettantes in the curious, the beautiful and the old. It was Sir William's great achievement not only to realize for the first time the need for co-ordinating these efforts but to find the means by which this co-ordination could be effected and further investigations

[1] An event of great significance which, had it been followed up, might have led to important discoveries, took place a little before April 1786, when a Madras peasant found below the ruins of a Hindu temple near Nellore a number of Roman coins and medals belonging to the second century A.D. *Asiatick Researches*, II (1790), p. 331. But little notice appears to have been taken of the incident.

[2] Prominent among the sponsors of the Society was Warren Hastings, on whom, ten years earlier, no less a personage than Dr. Johnson had impressed the need for taking up archaeological investigations in India. Dr. Johnson's letter to Hastings on the subject, dated 30 March 1774, is reproduced in pl. I. (Original in British Museum Additional Manuscripts, 29196, 1b-2, microfilm copy available in the National Archives of India.)

[3] Cf. the descriptions of Bījāpur in Tavernier, of Agra and Delhi in Finch and Bernier, of the cave-temples in west India in Thevenot, Careri, Fryer, Ovington, Hamilton, and Anquetil du Perron, the general account of Indian monuments in Joseph Tieffenthaler and the description of Mahābalipuram by William Chambers, who had surveyed it in 1772 and 1776. *Asiatick Researches*, I (1778), p. 145.

could be pursued on systematic lines. Once started, the Society thrived rapidly, and contributions commenced pouring in upon it from all quarters announcing new finds or new interpretations of materials already known. A journal, the *Asiatick Researches*, was started in 1788 to make public the results of these new efforts, and a museum was set up in 1814 to house the objects collected by the Society's growing band of workers. The start made in Bengal was soon followed up in other parts of India and 'Literary Societies' modelled on the Asiatic Society made their appearance in Bombay and Madras.[1]

1. ARCHAEOLOGY IN CLOSET

The aims of these pioneers in archaeology were, however, far from purely archaeological. Their very programme, which embraced an endless variety of subjects, ranging from ethnology to pure mathematics, from geology to meteorological observations, would belie their having any such aim. They were, as could only be expected, innocent of all archaeological techniques, whether of survey or of excavation or of interpretation. More practised in literary researches, they seemed inclined to place a far greater reliance on man's literary remains than on the material vestiges left by him. It is, therefore, no wonder that the activities of the pioneers were more or less confined to the translation and expounding of ancient books and inscriptions or to highly speculative dissertations, the worst examples of which are perhaps provided by Francis Wilford's fantastic interpretations of the Ellora and Salsette inscriptions and his still wilder series of pseudo-antiquarian studies, published between 1792 and 1822, in which important fragments of information are found embedded in a mass of crude conjectures.[2] Not that the value of ancient monuments was totally disregarded by these pioneers. There were among them travelling antiquarians who gave glowing accounts of the wonders of Ellora, of the massive grandeur of the Quṭb Mīnār or the ethereal beauty of the Tāj Maḥal. But everything was vague and romantic. There were few measurements and no plans. Even those who, like H.T. Colebrooke, could realize that 'in the scarcity of authentic materials for the ancient and even the modern history of the Hindu race', the importance 'attached to all genuine monuments was amply justified' also believed that the function of the monuments was only to elucidate 'the scattered information which can yet be collected from the remains of Indian literature'.[3]

Yet when all is said, it is difficult to overestimate the contribution made to the cause of Indian archaeology by these early enthusiasts whom Cunningham picturesquely called 'closet archaeologists'.[4] First and foremost stands the name of Sir William Jones himself, who, by his brilliant identification of Chandragupta Maurya with Sandrokottos of Greek historians, established the first positive date in Indian archaeology which remained for many years to come 'the sole firm ground in the quicksands of Indian history'. At the same time he located the site of the classical Palibothra at the confluence of the Gangā and the Son and was thus able to provide a starting point from which the future explorer of ancient Indian geography could pursue his investigations.[5] Equally remarkable were the researches of his colleague Charles Wilkinson, to whom belongs the credit of

[1] The Literary Society of Bombay was started in 1804 and that of Madras in 1818.

[2] F. Wilford, 'Account of some ancient inscriptions', *Asiatick Researches*, V (1798), p. 136; 'On Egypt and other countries . . . from the ancient books of the Hindus', *ibid.*, III (1792), p. 295; 'A dissertation on Semiramis ... . from the Hindu sacred books', *ibid.*, IV (1795), p. 363, etc.

[3] *Ibid.*, IX (1807), p. 398.

[4] A. Cunningham, *Arch. Surv. Ind. Rep.*, I (Simla, 1871), p. xviii.

[5] *Asiatick Researches*, IV, p. 11.

deciphering the Gupta as well as the *kuṭila* script,[1] and of thus laying the foundation of Indian epigraphical studies. The methods of epigraphical researches were put even on a more scientific basis by H. T. Colebrooke, Jone's successor to the presidency of the Asiatic Society and his equal in scholarship in Sanskrit and the classical languages, and by H. H. Wilson, the next president, whose *Ariana Antiqua* will remain a permanent monument to the painstaking researches he had carried out on the antiquities of Afghanistan.

In western India Sir Charles Warre Malet broke a new ground by publishing in 1794 a paper on the Ellora caves with drawings by Lt. Manby.[2] He was followed by Salt, who, in 1806, wrote an account of the Kanheri and Salsette caves illustrated by drawings and copies of sculptures.[3] In 1813 William Erskine, Secretary of the Bombay Literary Society, drew up an exhaustive essay on the Elephanta caves, in which he anticipated the period when vague and glowing accounts would give place to accurate descriptions and detailed plans.[4] In Madras, the leading antiquarian of this period was Collin Mackenzie, an ardent collector of archaeological material, whose collection of inscriptions, acquired by many years' assiduous labour numbered more than eight thousand and whose drawings of antiquities went to fill ten large folio volumes.[5]

All these were the results of individual efforts in which the Government of the day took little or no interest. But a change was presaged in 1800, when Francis Buchanan (later Buchanan-Hamilton) was deputed by Marquis of Wellesley to conduct a survey of Mysore. The completed report embodied interesting notices of the antiquities of the country, the first to be published under official auspices.[6] In 1807 Buchanan was instructed by the Supreme Government to undertake a further survey embracing 'the whole of the territories subject to the immediate authority of the Presidency of Fort William' as well as 'the adjacent countries' and covering, among other matters, topography, history and antiquities.[7] For eight years Buchanan pursued his investigations in the Districts of Dinājpur, Rangpur, Purneā, Bhāgalpur, Bihar, Shāhābād and Gorakhpur, when his labours were brought to an abrupt close. The reports of these surveys which, for the most part, remained unpublished[8] covered no less than thirtyseven volumes in addition to four volumes embodying over five hundred architectural and sculptural drawings and copies of sixtytwo inscriptions, quite a large number of which were from Bodh-Gayā. Buchanan was among the first to realize the value of detailed plans and exact measurements of ancient buildings and historic sites. His archaeological reconnaissances in eastern India were remarkable for sound judgment and conscientious

[1] *Asiatic Researches*, I (1788), pp. 131 and 279; II, p. 167.

[2] *Ibid.*, VI (1799), p. 389.

[3] *Trans. Literary Soc. Bombay*, I (1819), p. 41.

[4] *Ibid.*, I, p. 198. Erskine is better known as the translator of Bābur's *Memoirs*.

[5] H. H Wilson, *Mackenzie Collection, a Descriptive Catalogue of Oriental Mss. etc.* (Calcutta, 1828).

[6] *A Journey through the Countries of Mysore, Canara and Malabar performed under the orders of the Marquis of Wellesley for the express Purpose of Investigating into the State of Agriculture . . . the National and Civil History and Antiquities in the Dominions of the Raja of Mysore and the Countries acquired by the Hon'ble East India Company*, 3 vols. (London, 1807).

[7] Bengal Government letter, dated 11th September 1807, and Pub. Desp. from the Court, dated 7th January 1807. Cunningham is responsible for the origin of the belief that 'the instructions given to Buchanan included neither history nor antiquities of the country'. *Op. cit.*, p. iv.

[8] It is not easy to form an idea of the quality of Buchanan's work from Montgomerie Martin's eviscerated transcript of his mss. Martin's illustrations are generally poor representations of the originals. See G. R. Kaye and E. H. Johnston, *European Manuscripts in the India Office Library*, II, pt. ii (London, 1937), pp. 156-75.

accuracy, and when Cunningham, many years later, visited the places described by Buchanan he was struck by the meticulous minuteness and strict accuracy of the latter's descriptions.

The hope raised by Buchanan's splendid work of official participation in archaeological activities remained unfulfilled for several decades to come, and the Government continued to be insensible to the need for either continuing the survey of ancient monuments or adopting suitable measures for their preservation. From time to time a Governor-General, in an access of exceptional enlightenment, would spare a little money for the fitful repair of one monument or another. For example, Lord Minto appointed a committee to conduct repairs at the Tāj, and Moira ordered conservation-work at Fatehpur Sīkrī and Sikandara, while at Lord Amherst's instance elaborate repairs were undertaken at the Quṭb Mīnār. But these spasmodic efforts amounted to little, and of a well-articulated plan to protect the historic sites and buildings against ravages by nature or man there was as yet scarcely any sign. The Bengal Regulation XIX of 1810[1] no doubt invested the Government with power to intervene whenever any public edifice was exposed to the risks of misuse by private individuals, but the law was ineffective when a State official ordered the dismantlement of a monument or a Governor-General himself took steps to sell it by public auction.[2]

2. ARCHAEOLOGY COMES TO THE FIELD

From the stagnancy which threatened its very existence archaeology was saved by the genius and labours of a remarkable man, James Prinsep,[3] Assay-master, Calcutta Mint, who, from his appointment in 1833 as the Secretary of the Asiatic Society, assumed the virtual direction of the entire archaeological work in India. By training and inclination Prinsep was essentially a man of science, and he brought to bear on his task a scientific love of orderliness and precision and the scientists' mastery of factual details, which enabled him to march from discovery to discovery with a swiftness that still appears amazing. Among his most remarkable achievements was the unlocking, between 1834 and 1837, of the mystery of the Brāhmī and the Kharoshṭhī scripts, thus removing the thick crust of oblivion which, for many centuries, had concealed the character and language of the earliest Indian inscriptions. The decipherment of the inscriptions of Piyadasi, leading to the identification of that ruler with Emperor Aśoka, and the establishment of his

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[1] Sections iii and v, which are repeated almost verbatim in Madras Regulations VII of 1817.

[2] Under Lord Hastings it was decided to take away the marble bath in Shāh Jahān's palace for a gift to George IV. This was later sold by public auction under Lord Bentinck's orders. During the latter's administration the Tāj was on the point of being destroyed for the value of its marbles, and a proposal was made to lease the gardens at Sikandara to the Executive Engineer at Agra for speculative cultivation. For other examples, see Fergusson, *History of Architecture in all Countries* (London, 1867), II, pp. 458, 605 and 698; E.C. Bayley's unpublished note to J. D. Gordon, Aug. 1867, Pub. 6, Sep. 1867, 41. (This and other official documents referred to below are, unless otherwise stated, preserved in the National Archives of India.)

[3] Cunningham, *op. cit.*, pp. vii-ix; Hugh Falconer in *Colonial Magazine*, Dec. 1840; Prinsep, *Essays on Indian Antiquities*, ed. E. Thomas, 2 vols. (London, 1858); *Dictionary of National Biography* (London, 1908), XVI. Before embarking on his archaeological career Prinsep had published several architectural works of major importance. In 1831 he had started *Gleanings in Science* in conjunction with Major Herbert, which, on the 7th March 1832, changed its name into *Journal of the Asiatic Society of Bengal.*

contemporaneity with Antiochus III and Ptolemy Philadelphos helped to place Indian archaeology for the first time on a secure chronological basis.

A master in epigraphical and numismatic interpretation, Prinsep showed equal clear-sightedness in emphasizing the value of accurate field-survey[1] and precise recording, a predilection for which he had demonstrated as early as 1820 by executing a series of accurate plans and drawings of the streets and buildings of Banaras. His public duties as Assay-master, combined with his epigraphical pre-occupations, left him little time to conduct such surveys personally. But he encouraged others to undertake similar operations and took initiative in interpreting and publishing their results as soon as they were available. He was among the first to appreciate the great significance of the excavations carried out by Generals Ventura and Court in the Manikyāla *stūpa* in 1830 and in similar remains in the Indus-Jhelum region in 1833 and 1834,[2] which brought to light not only huge hoards of Buddhist relics and sculptures but coins and inscriptions revealing the existence of a new family of rulers, the Kushans. By calling attention to the results of these as well as other excavations carried out by Masson in Jalālābād and by Cunningham in Sārnāth,[3] he amply demonstrated what could be achieved by the combination of laborious exploration in the field with patient research in the closet.

Yet it would be untrue to say that either Prinsep or any of his colleagues understood the correct function of fieldwork, which was with them, as with many of their successors, a mere means to obtain plans of old buildings, new art-treasures, coins and epigraphic records. The main object of the early excavators was to discover objects which would grace museums rather than to procure the evidence that would reveal a civilization. In this respect the Indian archaeologist was no better inspired than his colleagues in the Near East, who would rifle a Mesopotamian *tell* to find Assyrian sculptures and an Egyptian tomb to discover papyri.

The premature death of Prinsep on the 20th April 1840, at the age of forty, left Indian archaeology without a leader, and though the impulse given by him was not lost, the progress of research, which during his life-time had been conducted as one great voyage under his sole command, became limited to lesser expeditions in various directions. Of his successors during this interregnum the most prominent were James Fergusson, Markham Kittoe,[4] Edward Thomas[5] and Cunningham[6] in north India, Sir Walter

[1]Prinsep was the first Indian antiquarian to use the term 'field archaeology'. Cunningham, *op. cit.*, p. xix.

[2]*Jour. Asiatic Soc. Bengal*, III (1834), pp. 313, 436 and 556.

[3]*Ibid.*, III, 152 and 329; *Proc. Asiatic Soc. Bengal*, 1836, p. 588.

[4]Kittoe's principal works include the discovery of the Dhaulī rock-edict, his survey of the *vihāras* and *chaityas* in Gayā and his excavations at Sārnāth in 1852. He died in 1853 when scarcely forty. For his works see *Jour. Asiatic Soc. Bengal*, VII (1838), pp. 531, 679 and 1060; XVI (1847), pp. 272 and 334; Cunningham, *op. cit.*, pp. xxiv-xxvii and 124-25.

[5]Besides continuing the Sārnāth excavation begun by Kittoe, Thomas made significant contributions to Indian numismatics. See his numerous articles in *Jour. Asiatic Soc. Bengal* and in *Numismata Orientalia*, started by him in 1874.

[6]Alexander Cunningham (1814-93): Second Lieutenant, Bengal Engineers, 1831; Aide-de-Camp to Auckland, 1836; Executive Engineer to the King of Oudh, 1840; at Gwalior, 1844-45; Field Engineer, First Sikh War, 1846, and Second Sikh War, 1848-49; Chief Engineer in Burma, 1856-58, in N.-W. Provinces, 1858-61; retired as Major General, 1861. Helped Prinsep materially in his investigations on the Indo-Greek and Indo-Scythic dynasties and added much useful information on the subject after the latter's death. Explored a large number of *stūpas* in Bhilsā, *Bhilsa Topes* (London, 1854), and contributed numerous articles to *Jour. Asiatic Soc. Bengal, Jour. Roy. Asiatic Soc.* and *Numismatic Chronicles.*

Eliott[1] in south India and Colonel Meadows Taylor,[2] Dr. Stevenson[3] and Dr. Bhau Daji in western India, each following his own line of work without any attempt at co-ordination. But special importance attaches to the researches of Fergusson, who, between 1829 and 1847, conducted an extensive survey of the different types of ancient buildings in India. He not only compiled the first illustrated history of Indian architecture[4] but evolved a system of classification of buildings which, for many years, remained the only tool for architectural surveys with his successors in the field.

3. THE BIRTH OF A NEW CONSCIENCE

The period following Prinsep's death was fruitful in a more significant way: it witnessed the first deliberate attempt made by the State to take an active interest in Indian monuments. The decisive step was taken in this direction in May 1844, when, following a suggestion from the Royal Asiatic Society of the United Kingdom,[5] the Court of Directors recommended to the Government of India the 'employment of some of our own talented officers' or 'any of the good means for getting copies of paintings not only in Ajanta but in other caves and to preserve the caves from dilapidation'. At the same time they requested to be supplied 'with a series of drawings of objects of interest . . . illustrative of the . . . phases, characters and conditions of its various . . . peoples comprising architecture, implements, costumes etc.' The Indian Government responded to the request by sanctioning a small sum for repairs to monuments, while the Bombay Government mapped out a thirtytwo-year scheme for getting prepared the drawings of the principal objects in western India. The Court considered[6] this move to be unpractical and drew up a detailed plan for the early formation of an antiquaries' commission for 'collecting accurate, minute, and well-classified information as to the nature, the extent and the state of existing monuments'. The plan was somewhat modified by Lord Hardinge, who recommended that the proposed commission should not be appointed 'till one or more officers possessing habits of research and knowledge of Indian antiquities' had compiled preliminary reports upon each temple and building in detail and that the commission's duty should consist in selecting from these reports specimens of building worthy of delineation.[7] The Court approved of the revised plan,[8] and Markham Kittoe was appointed to conduct operations in Bihar and Banaras. The only other results of this decision were the appointment of Major F. Maisey to draw the

[1] Eliott endeavoured to complete what Mackenzie had begun and obtained copies of no less than five hundred and ninetyfive inscriptions collected from Dhārwar, Sonda and north Mysore. He also illustrated the history of the Chāḷukyas and other southern dynasties with the help of their coins. *Jour. Roy. Asiatic Soc.*, IV (1836) p. 1.

[2] Taylor's principal work includes the discovery of megalithic monuments in Shorāpur. *Jour. Bombay Branch Roy. Asiatic Soc.*, III (1847-53), p. 179; IV (1852-53), p. 380; *Trans. Roy. Irish Academy*, XXIV (1865).

[3] Rev. J. Stevenson mainly devoted his attention to the cave-inscriptions of west India. *Jour. Bombay Branch Roy. Asiatic Soc.*, V (1853-57).

[4] *Handbook of Architecture* (London, 1855). This was preceded by *Illustrations of Rock-cut Temples of India* (London, 1845) and *Picturesque Illustrations of Ancient Architecture in Hindostan* (London, 1847).

[5] Pub. Desp. from Court, no. 15, 29 May 1844.

[6] *Ibid.*, no. 1, 27 Jan. 1847.

[7] India Pub. Desp. to Court, no. 4, 19 Apr. 1847.

[8] Pub. Desp. from Court, no. 24, 29 Sep. 1847.

antiquities at Kālinjar and the sculptures at Sānchī,[1] and of Captain Gill to copy the paintings in Ajaṇṭā[2] and the Ghāṭ caves and the setting up of the Bombay cave-temple commission, on whose recommendation Lt. Brett was commissioned in 1851 to take impressions of the cave-inscriptions.[3]

During the turmoil brought about by the Mutiny and the political changes which closely followed its termination, these schemes were lost sight of within a few years of their adoption, and it was not till 1861 that the State could be aroused to a sense of its responsibilities in respect of the archaeology of the country. In November that year Alexander Cunningham, who had as far ago as 1848[4] formulated, without success, a plan for an Indian Archaeological Survey, placed before Lord Canning a memorandum urging on him the supreme need for undertaking a programme of systematic and complete investigation.[5] Cunningham's arguments had a telling effect, and Canning felt convinced that 'it will not be to our credit . . . if we continue to allow such fields of investigation as the remains of the old Buddhist capital in Bihar . . . the plains round Delhi studded with ruins more thickly than even the campagna of Rome, and many others to remain without more examination than they have hitherto received'. The Governor-General, in conclusion, sanctioned a scheme of survey in northern India, the aims of which were defined to be 'an accurate description—illustrated by plans, measurements, drawings, or photographs and by copies of inscriptions—of such remains as deserve notice, with the history of them so far as it may be traceable, and a record of the traditions that are retained regarding them'.[6] Preservation of monuments was left outside the scope of the programme, as the Government had no desire to commit themselves to any future or unforeseen expense. But by passing an act (XX) in 1863[7] they took the momentous step to invest themselves with the authority 'to prevent injury to and preserve buildings remarkable for their antiquity or for their historical or architectural value'. This departure from the old policy of apathy and downright neglect may be appropriately regarded as marking the birth of a new conscience in the country.

4. THE FIRST ARCHAEOLOGICAL SURVEY OF INDIA: ALEXANDER CUNNINGHAM

The conduct of the operation was naturally entrusted to Cunningham, who had 'more than any other officer on this side of India made the antiquities of the country his study'.[8] The new Archaeological Surveyor brought to his task the ideas and the techniques he had inherited from Prinsep and a mind which was at that time essentially

[1] G. Andrews' note to Henry Yule and the latter's Minute, 10 Feb. 1862 (P.W.D. Gen., 14 Feb. 1862, 28-33A). Kittoe was appointed Archaeological Enquirer in N.-W. Provinces. On his work see his letter to Cunningham, dated 19 May 1852, summarized by the latter in *Arch. Surv. Ind.*, I, pp. 124 ff. and E. Thomas, 'Notes on the excavations at Sarnath', *Jour. Roy. Asiatic Soc.*, 1854, pp. 469 ff. On Maisey see *Report to the Govt. of N.-W.P.* 1847; *Jour. Asiatic Soc. Bengal*, XVII, pt. i (1848), pp. 171 and 333.

[2] Yule's Minutes, *op. cit.*; J. Geohagan's note, 9 Mar. 1870 (Pub. 30, Jul. 1870, 204-16).

[3] Bombay Government Resolution, 31 Jul. 1848.

[4] 'Proposed archaeological investigation', *Jour. Asiatic Soc. Bengal*, XVII, pt. i (1848), p. 535.

[5] P.W.D. Gen., 14 Feb. 1862, 28-33A; *Arch. Surv. Ind. Rep.*, I, pp. iii-viii.

[6] Minute, 22 Jan. 1862 (P.W.D. Gen., 14 Feb. 1862, 28-33A); *Arch. Surv. Ind. Rep.*, I, pp. i-iii.

[7] Sec. XXIII-XXIV.

[8] Cunningham was given a salary of Rs. 450 with a field-allowance of Rs. 250 and *a share in the antiquities to be discovered by him.*

pre-occupied with topographical problems, particularly those brought to the forefront by the recently published records of Fa-Hien and Hiuen Tsang. No wonder, therefore, that we find him dominated for the most part by the single idea of locating the holy places the Chinese pilgrims had traversed. 'In describing the ancient geography of India', he announced, 'the Elder Pliny, for the sake of clearness, follows the footsteps of Alexander the Great. For a similar reason I would follow the footsteps of the Chinese pilgrim Hwen-Thsang.' Within the short space from November 1861 to January 1865,[1] embracing the first phase of his operations, Cunningham succeeded in covering a vast area stretching from Gayā in the east to the Indus in the north-west, and from Kalsī in the north to the Narmadā in the south, having carefully surveyed and reported on every monument of note in all the historical sites visited by him.[2] The results of these operations received the highest approbation from the outside world and particularly from Sir Charles Wood, India's first Secretary of State, who observed that the preservation of the historical monuments and their accurate description were objects well-deserving the attention of the Government.[3] Lord Lawrence's Government, however, decided otherwise, and these useful labours came to an abrupt termination with the abolition of the Archaeological Survey in February 1866.[4]

5. WITHDRAWAL OF CUNNINGHAM

The vacuum created by Cunningham's withdrawal was but inadequately filled in by spasmodic official efforts in which genuine archaeological aims played very little part. Prompted by a letter privately addressed by Sir Stafford Northcote, the new Secretary of State, on the need for preserving architectural remains in India,[5] Lord Lawrence's government issued, on the 29th August 1867, a circular letter to all Local Governments desiring lists to be made of all historic buildings and photographs to be obtained of such of them as any amateur might chance to photograph.[6] Sir Stafford, however, found the scheme inadequate and directed that plans as well as photographs should be prepared on a systematic basis and that these should be accompanied with a written description of the subject. Following a suggestion from the Council of Education, Science and Art Department, England, it was further proposed by him that casts should be made of various buildings calculated to exemplify the different styles of Indian archi-

[1] The date usually given for the constitution of the first Archaeological Survey of India is 1860: C. Markham, *Memoir of the Indian Surveys*, 2nd ed. (London, 1878), p. 263; G. Bühler in *Jour. Roy. Asiatic Soc.*, 1895, pp. 649 ff.; Curzon's speech, dated 6 Feb. 1900; N.P. Chakravarti in *Archaeology in India* (Delhi, 1950), p. 2. There is, however, no documentary evidence to support this date.

[2] An archaeological map of India prepared by Cunningham, his letter dated the 12th December 1863 to Colonel R. Strachey, announcing the identification of the ancient site of Ahichchhatrā, and his daily journal containing information about the same discovery are reproduced on pls. IV-VI. Originals in P.W.D. Gen., 14 Feb. 1862, 28-33A, and Jan. 1863, 60-64.

[3] P.W.D. Desp. from London no. 28, 24 Jun. 1864; no. 29, 16 Jun. 1866.

[4] The document relating to this decision is not traceable, but Cunningham's letter to Government, dated 15th Jan. 1865, shows that he already knew of it. He left for England on the 9th February 1866, P.W.D. Civil Works Misc., Mar. 1866, 6 and 9.

[5] Lawrence's Minute, 28 Aug. 1867, Pub., 6 Sep. 1867, 41.

[6] Circular no. 57-4030-40A, *ibid.* The instructions covered the Indian States including Hyderabad and Mysore and were circulated to all Political Officers. Also Pub. Desp. to London, no. 163, 6 Sep. 1867.

tecture, the expenses being shared between the Council and the Indian Government.[1] The main features of the programme which was drawn up in consequence were that the task should be committed to the various Local Governments with a moderate allotment of money not exceeding Rs. 52,000 a year and that the principals of the art colleges in India should train Indian workers to make moulds from which any requisite number of casts could be furnished. Four independent parties were proposed to conduct operations in Bombay, Madras, Bengal and the North-Western Provinces.[2] The results following from these operations were, however, hardly commensurate with either the money, the labour or the time applied to them.[3] In Bombay, thanks chiefly to the efforts of Sykes and Burgess, some good photographs and plans were produced, and a number of casts were prepared under the able supervision of Terry. The party in the upper Provinces, led by Lt. H. H. Cole, who had been appointed the local Archaeological Surveyor,[4] took a number of views of Kashmir, Mathurā and other places, all of which were subsequently published in his *Archaeological Survey of India* (London, 1869-70). About the same time Cole also prepared a gigantic cast of the Sānchī gateway in one hundred and twelve pieces for the use of the South Kensington Museum. But the lists of monuments compiled under the scheme were generally found to be unsatisfactory. The most significant achievement of the project was the magnificent survey-operation which Rajendralal Mitra carried out in Orissa between 1868 and 1869 and which was later described in two monumental volumes, entitled *Antiquities of Orissa.*[5]

The belief which dominated the archaeological thought of the period was that only the objects which were attractive as artistic or architectural pieces needed caring for, and that the archaeologists' function was simply to make casts or to take photographs. The only man in India to see the fallacy underlying this view was E. C. Bayley, Secretary to the Home Department, who declared it to be the supreme duty of the Government not only to conserve all historical remains that had been located but to encourage the exploration of others yet to be discovered. The extent to which the latter might be brought to light was, in his view, almost incredible, and he was convinced that many a Pompeii was lying buried in India untouched by the archaeologists' spade.[6] Bayley's voice remained unheeded for the moment, and things did not change for the better till the Duke of Argyll, the new Secretary of State, directed his attention to the problem. Argyll realized at once the need for divesting the Government of the duties they had undertaken of financing desultory attempts at photographing and preparing casts and felt persuaded that the time had arrived for directing researches in a more systematic and deliberate manner than had been attempted before. In his despatch of the 11th January 1870 he advised the Government of India to make a new start by establishing a central department which would tackle the archaeological problem of the whole country. He strongly decried the

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[1] Norman McLeod to Secy. of State, 30 Jul. 1867; Pub. Desp. from London, no. 165, 9 Dec. 1868.

[2] Pub. Dept. Resolution, 14-930-41, 24 Feb. 1868; Pub. Desp. to London, no. 34, 28 Feb. 1868; no. 92, 14 May 1868.

[3] J. Geohagan's note, *op. cit.*, which gives a review of the operations undertaken. Also E. C. Bayley's note, 22 Feb. 1869, Pub., 6 Mar. 1869, 9-10.

[4] Cole used to designate himself, no doubt unjustifiably, 'Superintendent, Archaeological Survey of India', Pub., 30 Jul. 1870, 204. On his employment on the modelling of the Sānchī gateway, see Bayley's letter to N.-W.P. Government, 2 Mar. 1869, Pub., 6 Mar. 1869, 9-10.

[5] Calcutta, 1875-80. For Mitra's plan of archaeological survey see his letter, 11 Apr. 1868 to Capt. Stansfield, Private Secretary to Lt. Governor of Bengal, Pub., Aug. 1868, 83-85.

[6] E. C. Bayley's note to Gordon, Aug. 1867, Pub., 6 Sep. 1867, 41.

prevailing tendency to rifle archaeological sites of their antiquities, as he had the insight, rare all over the world in those days, to be able to perceive that the antiquities were instructive only when preserved in their original context. He, moreover, laid special stress on the need for conservation, pointing out that it was the bounden duty of the Government 'to prevent its own servants from wantonly accelerating the decay' of monuments.[1]

6. CUNNINGHAM RETURNS

The effect of the despatch was the immediate revival of the Archaeological Survey of India as a distinct department of the Government and the appointment of General Cunningham as its Director General.[2] In an official resolution the task of the new department was declared to embody 'a complete search over the whole country, and a systematic record and description of all architectural and other remains that are either remarkable for their antiquity, or their beauty or their historical interest'. Cunningham was further advised to direct his attention to the preparation of a brief summary of the labours of former enquirers and of the results which had already been obtained and to the formulation of a general scheme of a systematic enquiry for the guidance of a staff of assistants in present and future researches. He was, to start with, given a staff of two assistants, J. D. Beglar and A. C. Carlleyle, who were later joined by H. B. W. Garrick. But the Government expressed a desire that as far as possible intelligent 'natives' should be employed in, and trained to, the task of photographing, measuring and surveying buildings, directing excavations and the like and deciphering inscriptions. It was believed that an annual sum of £5,000 would be sufficient for long time to come not only to maintain the central agency but to aid local researches and provide for the annual publication of the results attained.[3]

Cunningham came back to resume his interrupted task in February 1871, almost about the same time when Schliemann was preparing for his epoch-making excavations in Hissarlik. The world of archaeological thought was at that time in a state of ferment. But Cunningham appears to have scarcely known anything of it, and he preferred to adhere to his old aims and old methods. Immediately on his arrival he applied himself with his two assistants to a survey of the two great capitals of the Mughul empire, Delhi and Agra. The year 1872 was spent on tours in Rājpūtānā, Bundelkhaṇḍ, Mathurā, Bodh-Gayā and Gauṛ, while in 1873 a survey was carried out of selected sites in Panjab,

[1] Pub. Desp., no. 4, 11 Jan. 1870. In arriving at his decision Argyll was considerably influenced by Cunningham's memorandum of March 1869 on the archaeological remains in India, Pub., 30 Jul. 1870, 204-16.

[2] Himself an antiquarian of great repute, Bayley had a large part in shaping the new archaeological policy of the Government. Cunningham, in reality, was his choice (note dated March (?) 1870). See also Mayo's minute, 30 May 1870, in which he recorded: 'I think the time is come when a great and enlightened Government can no longer neglect contributing to the archaeological literature of the world the result of systematic investigations into monuments and remains, which perhaps are unequalled in their historical and archaeological value', Pub., 30 Jul. 1870, 204-16; Pub. Desp. to London no. 84, 29 Jul. 1870. Cunningham was appointed on a salary of Rs. 2,000 per month; Pub. Desp. from London no. 111, 24 Nov. 1870. The total expenses of the Department came to about Rs. 54,000 (pay of two Assistants, 9,600; establishment including one draftsman, two measurers, two servants, six temporary hands, contingent charges and travelling allowances, 8,000; Imperial grant to Provincial Budgets in north India, 12,500). Home, Arch., Jul. 1885, 5-9.

[3] Pub. Resolution no. 649-50, 2 Feb. 1871, Pub., 18 Feb. 1871, 28-29; *Gazette of India*, 11 Feb. 1871, p. 64.

in the course of which an extensive collection of Indo-Greek sculptures was obtained. Between 1873 and 1877 Cunningham traversed nearly the whole of the Central Provinces, Bundelkhaṇḍ and Mālwā, his first attention being directed to the magnificent *stūpa* of Bharhut. He also succeeded in discovering several monolithic capitals and other remains of Aśoka and his successors and numerous specimens of the architecture of the Gupta and the post-Gupta periods. The season of 1878-79 was devoted to further surveys in Panjab, the object of which was to complete as far as possible a general exploration of the province. The expedition was rewarded by the discovery of a huge hoard of pre-Alexandrian Indian coins at the site of Taxila. The next season found Cunningham engaged in a tour in Bengal and Bihar, in the course of which he was able to pick up a dated inscription fixing the accession of Dharmapāla of the Pāla dynasty. The year 1880-81 was spent in clearing the Bodh-Gayā temple and in identifying the sites of many holy places described by the Chinese pilgrims, while the following season was devoted to a further tour in the Central Provinces. The expeditions undertaken between 1882 and 1885, which brought to a close Cunningham's exploration-programme, enabled him to examine and report carefully on many historic sites in eastern Rājpūtānā, Bundelkhaṇḍ and Rewā. The results of all these labours may be aptly summed up in his own words thus:

'I have identified the sites of many of the chief cities and most famous places of ancient India, such as the rock of Aornos, the city of Taxila, and the fortress of Sangala, all connected with the history of Alexander the Great. In India I have found the sites of the celebrated cities of Sankisa, Śrāvasti and Kausāmbi, all intimately connected with the history of Buddha. Amongst other discoveries I may mention the Great Stūpa of Bharhūt, on which most of the principal events of Buddha's life were sculptured and inscribed. I have found three dated inscriptions of King Aśoka, and my assistants have brought to light a new pillar of Aśoka, and a new text of his rock edicts in Bactrian characters, in which the whole of the 12th edict . . . is complete. I have traced the Gupta style of architecture in the temples of the Gupta kings at Tigowa, Bilsar, Bhitargaon, Kuthera, and Deogarh, and I have discovered new inscriptions of this powerful dynasty at Eran, Udayagiri and other places.'[1]

Although survey and exploration formed the first item in Cunningham's programme, he found time to direct his attention to the problem of epigraphy as well. A number of inscriptions had already been published by scholars, but these efforts were absolutely unplanned and too few and far between, and the out-turn was altogether insignificant in comparison with the extensive materials that were available. But epigraphy received a new impetus with the founding in 1872 by James Burgess of the *Indian Antiquary*, which made possible the publication by scholars like Bühler and Fleet, Eggeling and Rice, Bhandarkar and Indraji, of many valuable inscriptions not only with texts and translations, but, in many cases, with lithographic facsimiles. Cunningham's own survey-tours provided him with opportunities to pick up and examine a large number of new inscriptions which he took care to notice or publish in his survey-reports. But he felt the urge for doing the work in a more systematic and standardized manner and was persuaded that each series of inscriptions should be published in a connected form, according to the dynasties or succession of dynasties instead of being scattered, as then, over a series of different volumes and mixed up with others that had no bearing on them. The prevailing practice not only prevented the adoption of a uniform method of editing but inevitably led to duplication, the same ground being gone over again and again by different scholars working on the same inscriptions unknown to each other. Cunningham, therefore,

[1] Cunningham to Government, 15 Feb. 1885.

planned to bring out a series of 'corpora' of inscriptions, the object of which was to present connected epigraphical materials in a compact and handy volume. The outcome of the plan was the appearance in 1877 of the magnificent first volume of *Corpus Inscriptionum Indicarum* embodying carefully edited texts of all the available inscriptions of Aśoka and his grandson with translations and lithographic facsimiles. But the task was already proving too great for him to cope with, and he found it necessary to entrust it to the authoritative and responsible control of a qualified full-time epigraphist. On the 3rd October 1881 he placed before the Government a proposal for setting up an independent epigraphical survey under the direction of J. F. Fleet, who had already become the *facile princep* in the deciphering of old inscriptions.[1] With his usual liberality he offered to give up Rs. 500 a month of his own salary towards the pay of the new officer. Supported by James Burgess and the Berlin International Congress of Orientalists, the proposal eventually received the sanction of the Secretary of State, and Fleet was appointed on the 17th January 1883 as Government Epigraphist, experimentally on a term of three years.[2] The first duty that devolved on him was to edit the inscriptions of the Early Guptas and others connected with them, which were ultimately published in 1888 as the third volume in the series started by Cunningham. Fleet had to collect his materials all anew, in the course of which he was able to discover some entirely new inscriptions which set at rest the long-disputed question of the epoch of the Gupta era. The new volume included the finest set of lithographs that had ever yet been published and made a new starting point in the study of Indian epigraphy. The norm set by him in the editing of inscriptions is followed by Indian epigraphists even now.

Conservation was from the very first kept outside the Director General's purview. But on the 13th February 1873 the Central Government issued a circular assigning to Local Governments the duty of caring for the preservation of all buildings and monuments of historical and architectural interest.[3] A different emphasis, however, came to be placed on Imperial responsibility in this respect when Lord Lytton took up the reins of the Viceregal office. One of his first endeavours was to prevent the despoiling of the archaeological remains by treasure-hunters, and the outcome was the Treasure Trove Act of 1878, which authorized the Government to claim possession of any treasure unearthed that exceeded ten rupees in value. In January 1878 Lytton recorded in a Minute that 'the preservation of the national antiquities and works of art ought not to be exclusively left to the charge of Local Governments, which may not always be alive to the importance of such a duty. Lieutenant Governors who combined aesthetic culture with administrative energy are not likely to be very common, and I cannot conceive of any claims upon the administrative and financial resources of the Supreme Government more essentially imperial than this'. Lytton followed this up with a resolution drafted in the same year recommending the appointment of a Curator of Ancient Monuments, who was to carry out under the Central Government a general system of conservation. He was to prepare classified lists of the monuments of each province, grouping them according as they required to be kept in permanent good repair or were decayed beyond that point but still not in complete ruin

[1] Pub., Sep. 1881, 25-28.

[2] Burgess' memorandum on the collection and publication of Indian historical inscriptions, 20 Aug. 1881; President of the Fifth International Congress of Orientalists to Secretary of State, 22 Oct. 1881; Financial Desp. to Secretary of State, no. 157, 9 Jun. 1882, Home, Arch., Nov. 1882, 18-27; Desp. from London, no. 146, 21 Sep. 1882, Home, Arch., Nov. 1882, 5-6; Resolution 17, 6 Feb. 1883, Home, Arch., Feb. 1883, 2-7. Fleet was given a salary of Rs. 1,400 and an establishment allowance of Rs. 960.

[3] Circular no. 9, P.W.D., 13 Feb. 1873.

or were unimportant or irretrievably ruined. The Central Government were then to arrange with each Local Government for the grant to be made to the latter for the preservation of the monuments in aid of local resources. All provincial projects for repair and restoration were to be submitted to the Centre through the Curator, points of architectural taste being referred to a Committee of Taste, to be set up under the scheme.[1] The proposal, though negatived by the Secretary of State in 1878 on the ground that the scrutiny of provincial projects could be equally well-done by the Director General of Archaeology and that the proposed Curator was an unnecessary fifth wheel in the coach, was revived under Lord Ripon in a slightly modified form, and the appointment of a special officer as Curator of Ancient Monuments was sanctioned on the 11th November 1880 for a term of three years.[2]

Major H. H. Cole was the officer selected for the new post, and he joined his duties in January 1881. His task was 'to give the Government of India and the Local Governments the advantage of professional advice concerning the restoration and conservation of ancient monuments throughout India', the Local Governments being left to provide a permanent system of inspection and conservation. Earlier, in April 1880, Cole had been appointed on the special duty of examining the condition of the monuments of Lahore, Delhi and Agra and had compiled an excellent report of the work done. He had great knowledge of his subject, great industry and great enthusiasm, and during the three years allotted to him he was able to examine nearly all the most important buildings in British India and the Indian States and to draw up valuable lists and memoranda of work to be done, which were later appended to his three gigantic reports (published in 1882, 1883 and 1885). Cole also produced in twentytwo parts a series of Preliminary Reports on particular groups of monuments in Bombay, Madras, Rājputānā, Hyderabad, Panjab and the North-Western Provinces. He personally supervised the repairs of quite a large number of these buildings, and under his aegis many useful restorations were effected in the gateway at Sānchī, in the fort at Agra, in Akbar's tomb at Sikandara, at Fatehpur Sīkrī, Mathurā and Brindāvan. He suffered, however, from a tendency to go beyond his special field of work and take part in activities which had no bearing on conservation. He actually embarked on archaeological survey and excavation-operations and projected a costly scheme of publication, which in the end had to be stopped under Government orders. The materials, which contained exceptionally fine illustrations of the most famous buildings surveyed by him, were subsequently distributed in ten folio volumes without title-page. When his term lapsed in 1883, the appointment was abolished, and the Government decided to revert to the old system of leaving the task of conservation to Local Governments.[3]

The new decision was communicated to the Local Governments in a Resolution dated the 26th November 1883.[4] The latter were required to take up on the basis of Cole's Report for 1882-83 the preparation of a classified list showing separately: (1) the monuments which from their 'present condition' and historical or archaeological value ought to be kept in permanent good repairs; (2) those which it was only possible or desirable to save from further decay by such minor measures as the eradication of vegetation, the exclusion of water from the walls or the like; and (3) those which for their advanced stage of decay or comparative unimportance it was impossible or unnecessary to preserve. Due

[1]Financial (Expenditure), Dec. 1878, 570-74.

[2]P. W. Desp., no. 43, 11 Nov. 1880; Financial Accts., March 1881, 507-10.

[3]Financial B (Salaries), Apr. 1884, 763-67; May 1884, 953.

[4]Home, Arch., Resolution no. 3-168-83, Home, Arch., Dec. 1883, 3-6; Finance and Commerce Desp. no. 2, 18 Dec. 1883.

provision was to be made for the proper custody and keeping up of the monuments in classes I and II, the cost being charged to the public works allotment of each province. Only in very special cases would the Government of India promise further assistance from the Imperial funds. But when all the lists eventually came to be submitted, they were found to be drawn up on such very dissimilar plans that a satisfactory amalgamation was unpracticable, and the Government had to send them back for being revised according to the form prescribed by them.[1]

The exclusion of conservation from the scope of the Archaeological Survey brought forth comments from Cunningham, who believed that 'the trained and experienced archaeologist who has examined and measured and described the buildings of different ages was naturally the best authority as to the style of all the repairs that may be required for any ancient monuments'. He pointed out that the divided authority was a mistake and that the only judicious arrangement was the combination of conservation with exploration.[2]

But Cunningham had in the meantime decided to retire. He had put up almost eighteen years' continuous labour and felt satisfied that the greater part of north India had been fully explored and that the time had arrived when the Survey-organization itself could be dissolved without any loss to archaeology. He believed that the future work of exploration could be successfully carried out by a much smaller and less expensive establishment. He accordingly recommended the abolition of the Director General's post and the re-organization of north India into three independent circles—Panjab with Sind and Rājpūtānā, the North-Western Provinces (present Uttar Pradesh) with the Central India Agency and the Central Provinces; and Bengal including Bihar, Orissa, Assam and Chota Nagpur, each being managed by a separate Surveyor with a small staff of two assistants and two draftsmen. Madras with Bombay and Hyderabad was to be left to the charge of Burgess, the then archaeological Surveyor of the area, while epigraphy was to remain, as at that time, to be dealt with by Fleet. The Surveyors were to be on the footing of professional advisers to the Local Governments and the Political Agencies, to which they were required to send their reports and programmes of work and which they were also to advise as to the various monuments and buildings which required to be restored or preserved.[3] These recommendations were accepted by the Government with the only modification that the new Surveyors should submit their reports on the strictly survey-part of their work through Burgess.[4] Under the new arrangement Bengal was entrusted to Cunningham's assistant Beglar, and the North-Western Provinces to Major J. B. Keith, who had as his assistant Dr. A. Führer, then Curator, Lucknow Museum, while the Panjab Circle was placed under C. J. Rodgers.

Cunningham's retirement on the 1st October 1885 robbed the Indian archaeological scene of its most familiar figure, a colossus which had been striding it for over a quarter of a century. His contribution to the development of Indian archaeology has been vigorously disputed. To some he was the father of Indian archaeology, who had by his ceaseless labours given form and precision to aims and methods which had before him

[1] An exception was provided by Burgess' *List of Antiquarian Remains in Bombay Presidency* (Bombay, 1885), which included those of Berar and Sind as well.

[2] Cunningham's memorandum on the Archaeological Department and the conservation of monuments, Home, Arch., Jul. 1885, 5-9.

[3] *Ibid.* and Cunningham's memorandum, dated 21 Apr. 1885, in the same collection.

[4] Finance and Commerce (Salaries) Despatch no. 48, 17 Feb. 1885; Home, Arch., Resolution no. 2-8-142, 6 Jun. 1885. The Surveyors were given a scale of Rs. 600-25-700, Assistant Surveyors Rs. 300-25-400, Draftsmen Rs. 180-10-220 and writers Rs. 50 per month.

been only vague and indistinct. To others he was only a remarkable amateur whose reputation derived from the astonishing value and interest of his finds and who remained to the last ignorant of all the scientific methods, which, during the period of his sway, had forced their way into the understanding of the western and the Near Eastern archaeologists. Archaeology with him was but a search for past architectural styles, art-treasures, coins and inscriptions, and its connexion with the study of the common objects which constituted man's material culture ever eluded his grasp, although this connexion had been firmly established by the works of Thomsen, Worsaae and Nilsson in Denmark, of Giuseppe Fiorelli in Italy, of Curtius, Dorpfeld and Schliemann in Greece and Anatolia. The excavations undertaken by Cunningham seldom went beyond what might be called prospecting. A very considerable number of *stūpas* were no doubt opened, rifled of their deposits and searched for inscriptions; and surface-diggings and small clearings were effected in many of the ancient mounds and fields of ruins. But rarely did he undertake deep excavation, and such of it as was attempted, as at Gayā, Sānchī, Taxila and Bhilsā, did more harm than good by its consistent neglect of stratigraphical principles leading inevitably to the destruction of much archaeological evidence. To the claims of prehistory he remained indifferent to the end, and in the megalithic monuments, which the conjoined labours of Babington and Harkness, Congreve and Kearnes, Newbold and Meadows Taylor had brought to light, he was disposed to see only an earlier form of the *stūpa*.[1] Even more surprising is the apathy he evinced towards palaeoliths, the occurrence of which in India had been established beyond doubt by Bruce Foote and his colleagues of the Geological Survey during the early sixties of the century.[2] Cunningham was within an ace of an epoch-making discovery in 1873, when he unearthed at Harappā a pictographic seal along with many specimens of Harappan pottery.[3] But he scarcely understood that they were the fragments of a great past civilization. He touched it, but passed it by. Yet, it would be sheer perversity to scan Cunningham for faults which he shared with all his colleagues in India and many in the west. No one with any archaeological experience can refuse to acknowledge the value of his great pioneering work. He was one of the first to stress the importance of fieldwork, accurate description and precise measurements, and he shared with Prinsep the honour of liberating archaeology of its literary affiliations. His ideal of survey-work was comprehensive enough to include every site that was of promise, every antiquity that was of interest, and he was responsible for evolving a uniform system of recording under which the description of each building was to be accompanied by an account of its history and purpose, of its mode of construction, of the nature and colour of its material and even of the mason's marks on the stones.[4] Above all, he was prompt in publishing his results, as is amply testified by the twentythree volumes of his survey-reports, which, in Lord Curzon's picturesque words, 'constitute . . . a noble mine of information in which the student has but to delve in order to discover an abundant spoil'.

7. JAMES BURGESS

Cunningham's place in west and south Indian archaeology was filled by James Burgess, whose keen interest in the antiquities of these regions and early training as an

[1] *Arch. Surv. Ind. Rep.*, I, pp. xxx-xxxi.

[2] Cf. R. Bruce Foote, 'On the occurrence of stone implements in the various parts of Madras and North Arcot Districts', *Madras Jour. Literature and Science*, III series, pt. 2 (1866).

[3] *Arch. Surv. Ind. Rep.*, V (Calcutta, 1875), p. 105 and pl. XXXIII.

[4] Memorandum on the archaeological remains in India, Pub., 30 Jul. 1871, 204-216.

architect had eminently fitted him for this significant rôle. When, in 1873,[1] a regular archaeological survey was for the first time constituted for west India, the charge of its operation was appropriately entrusted to Burgess, who had by that date compiled not only an extensive inventory of principal monuments in Bombay, Sind, Berar, the Central Provinces and Hyderabad, but had, in addition to a monograph on Elephanta, brought out three portfolios of photographs dealing with the Śatruñjaya temples, the monuments of Somnāth, Jūnāgaḍh, and Girnār and the ancient architecture of Gujarat and Ahmedabad. The new arrangement was sanctioned for three years, subsequently extended to five,[2] at an annual cost of Rs. 13,000.[3] There was no provision for a permanent staff, and Burgess was required to conduct his field-work for six months of cold season each year, at the end of which he was to dismiss his assistants and take the materials to England for publication.

Burgess started his operations on the 15th January 1874, covering in his first season everything of interest in Belgaum and Kaladgi Districts. The next season was devoted to Kāthiāwaḍ and Cutch, and the season of 1875-76 to the western districts of the Nizam's Dominions, the results of all these operations being published in three magnificent volumes of reports with numerous photographic and other illustrations. Burgess' fourth volume embodied a report on the Buddhist cave-temples in the Deccan, representing the result of this operations during 1876-79. On the expiry of his five-year term in 1879 Burgess found that he had covered only a small fraction of his programme. He asked for a further extension of four years and also pressed for a permanent staff that would carry on fieldwork during his absence in England.[4] The extension was agreed to, but the Government met his other demand only halfway by providing for the appointment of an assistant on a year-to-year basis.[5]

In November 1881 the scope of Burgess' activities underwent a radical expansion by the amalgamation with his existing charge that of the newly constituted Archaeological Survey of South India. A proposal for organizing a regular survey in the south had been in the air since about 1874, when the Secretary of State addressed a letter on the subject to the Provincial Government.[6] Delays, however, had intervened, and nothing substantial

[1] Burgess had formulated a proposal for setting up a Survey in west India as early as 1870 (letter to the Hon'ble B. H. Ellis, 28 Apr., Pub., 30 Jul. 1871, 204-216), and this had been repeated in his memorandum submitted to the Bombay Government in Aug. 1870. But it was not until 1871, when the Secretary of State directed the Local Governments' attention to the subject that a serious notice was taken of the matter. A scheme for survey was sanctioned by the Central Government only in August 1873, Home, Arch., Jun. 1882, 1-4. Burgess was given a salary of Rs. 800 per month, raised to Rs. 1,000 on the 1st March 1875.

[2] Bombay Government to India Government, no. 2792, 15 Sep. 1875.

[3] Raised in Dec. 1874 to Rs. 18,000, it came to be stabilized at Rs. 17,500 with effect from 1875. Home Dept. letter to Bombay Government, no. 1964, 24 Nov. 1875.

[4] Burgess to Bombay Government, 22 Dec. 1879, 15 Jan. 1880 and 17 Feb. 1882, Home, Arch., Oct. 1885, 41-48.

[5] Bombay Government Resolution in Bombay Gen. Dept. Proceedings, no. 214, 22 Jan. 1880, and no. 815, 4 Mar. 1882.

[6] The Secretary of States' letter was inspired by a representation made to him by the Oriental Congress of 1874. There was a talk in 1876 of appointing H. H. Cole as Surveyor, but this fizzled out. Sewell was put on to Amarāvatī survey in 1875. In 1879 the Central Government allotted to Madras a sum of Rs. 15,000 on condition that the work should be directed by Cunningham, but nothing came out of it, as the latter could not spare time for the work. In December 1880 the Secretary of State suggested that Madras should be added to the charge of Burgess. This took effect only in November 1881. It meant no immediate increase in Burgess' emoluments. His pay was, however, raised to Rs. 1,200 on the 6th October 1883.

had been done in the Province beyond the appointment of Robert Sewell of the Provincial Civil Service for conducting the exploration of the Amarāvatī *stūpa* and for the compilation of a basic list of all antiquarian remains in the Presidency. Sewell's lists of antiquarian remains and report on the Amarāvatī excavations carried out in 1877 thus formed the foundation on which Burgess was called upon to build. But Burgess was equal to the challenge, and in his first season he was able to complete the survey of the remains round Vijayawāḍa and the Amarāvatī and Jaggayyapeṭa *stūpas*, combining with this task a thorough examination of the Chāḷukyan temples in Dhārwar District. In 1882 his burden was somewhat lightened by the appointment of Alexander Rea as his assistant, in collaboration with whom he was able to bring to completion not only the survey of Madurā District which he had taken up but also the examination already undertaken of the monuments in the Belgaum region. In 1883-84, while Rea surveyed in detail the remains at Mahābalipuram and the ruins at Hampi, Burgess directed his attention to the Muslim architecture at Champāner, Dholkā and Ahmedabad. The next year was devoted to the survey of Dabhoi, Cambay and Broach and to the study of the Pallava temples at Kānchī. Burgess had by then been able to make a better assessment of the magnitude and complexity of his task and had felt convinced that for west India alone, exclusive of Sind, there were six more years' work ahead and that to complete the work it was essential that the staff under him should be sanctioned on a permanent basis. For Madras he found it more difficult to make an estimate, but he suggested that the work should be continued for a further term of five years, that the staff should be given a regular scale of pay and that an epigraphist well-versed in Sanskrit, Pāli and the Dravidian languages should be employed on translating inscriptions in these languages, to enable the Survey to complete its work 'within a reasonable time'. The scheme was approved by the Government of India for a term of five years,[1] and Dr. E. Hultzsch, an eminent linguist, was selected for the post of Epigraphist in August 1886 on the basis of a three-year contract.[2]

While the Survey-machine in the south and the west was being put in order, Burgess was invited by the Government to fill Cunningham's place in north India by becoming the channel for the submission of the reports from the three new Survey-Circles (above p. 17). Burgess, however, had no desire to accept his predecessor's position without his powers and pointed out that the new system would not work unless it was placed under him in name as well as in fact.[3] With the solitary exception of Führer, then in temporary charge of the North-Western Provinces, none of the new Surveyors, in his view, had either the scholarship, experience or training essential for the direction of survey-work, and even Führer lacked architectural training which was a serious drawback. Each one of them therefore required detailed professional supervision almost at every stage. Burgess, moreover, found the system unnecessarily expensive and believed that substantial economy could be effected by retrenching some of the higher posts and employing instead a larger number of lower-paid assistants. He suggested the abolition of the Epigraphist's office, which was costing

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[1] Burgess to Bombay Government, 11 Jun. 1885; to Madras Government, 8 Apr. 1885; Government of India to Burgess, 30 Oct. 1885, Home, Arch., Oct. 1885, 41-48; Burgess to Bombay and Madras Governments, 7 Nov. 1885; Government of India, Home, Arch., Resolution no. 4-9-94, 15 Mar. 1886; Financial (Salaries) Desp. to London, no. 140, 4 May 1886, Home, Arch., May 1886, 10-18. An allotment of Rs. 17,080 was made for the Bombay Survey and one of Rs. 16,960 for the Madras Survey. The pay of Burgess' assistants in Bombay and Madras was fixed at Rs. 420-40-580 and Rs. 350-25-500 respectively, Desp. from London, no. 140, 4 May 1886.

[2] Home, Arch., August 1886, 45-47. Hultzsch was given a salary of Rs. 400. He joined in November 1886.

[3] Burgess to Government of India, 27 Jan. and 6 Feb. 1886.

Government Rs. 20,000 annually without yielding, in his view, an adequate return, and he assured the Government that with a much smaller grant of Rs. 7,000 he would be able to get accomplished what Fleet was doing with the help of the most competent scholars in India and Europe.[1] As a further step both to efficiency and economy, Burgess recommended the complete amalgamation of conservation with survey-work and pleaded for closer co-operation between the museums and survey-officers in the matter of conserving, describing and studying the antiquities unearthed by the latter. All these recommendations bore fruit in an official decision to unify under a single executive head not only the three separate Surveys in the north, west and south but of the three distinct fields of operation popularly associated with archaeology: exploration, conservation and epigraphy.[2] But the unification remained no more than a distant ideal, and the machinery devised to implement it left little initiative or power in the hands of the Director General. No report or programme could reach him from any of his colleagues before it had been scrutinized by the appropriate Local Administration, whose suggestions he had no authority either to alter or set aside without reference to the Centre. Programmes of conservation were to be drawn up by the regional Surveyors and to be submitted to the local authorities for their decision. The Director General was to act only as a post-office; he could offer his comments but take no decision. At Burgess' suggestion, however, the Assistant Surveyor's post in the Panjab Circle was retrenched, and E. W. Smith was appointed as Architectural Assistant in the North-Western Provinces to fill the gaps in Führer's qualifications. With the termination of Fleet's appointment on the 1st June 1886, epigraphy also came under the control of the Survey, and an annual grant of Rs, 6,000 was placed at its disposal to enable the deciphering, the translation and the publication of ancient inscriptions.

Burgess' first task as Director General, whose duties he assumed on the 25th March 1886, was to obtain the details which, in his view, the northern Surveys had neglected in respect of architectural measurements and drawings. His aims and methods hardly differed from Cunningham's, except in the added emphasis he preferred to place on architectural survey. 'Archaeology being' in his view 'but the history of art', he considered it to be his aim 'to provide a pretty full illustration and history of ancient and medieval architecture down to the decline of the Muhammedan styles'.[3] To this one end he subordinated most of his programmes, as would be amply evidenced by the nature and the quality of the careful architectural surveys carried out either by him or by his colleagues during the eventful years covering his stewardship. Among the most outstanding of these activities was the elaborate survey made by Führer and Smith between 1886 and 1887 of the Sharqī architecture of Jaunpur and of the monuments of Zafarābād, Saheṭh Maheṭh and Ayodhyā. Equally noteworthy were the operations conducted by Smith during 1888-89 in Budaon, Lalitpur, Orchhā and other places in Bundelkhanḍ, the survey of ancient architecture in north Gujarat and the Muslim architecture in Bījāpur carried out by Henry Cousens, and that of the monuments at Mahābalipuram and of the antiquities in Krishṇā, Nellore and Godāvarī Districts completed by Rea during the same period. Burgess found hardly any time to take much active interest in excavation, and the only

[1] The proposal was strongly contested by Fleet, who wanted to separate epigraphy from the Archaeological Survey. Fleet to Government of India, 15 Feb. 1886.

[2] Home, Arch., Resolution no. 5-95-113, 15 Mar. 1886; Government of India to Burgess, 12 Apr. 1886; Financial (Salaries) Desp. to London no. 236, 7 Aug. 1886, Home, Arch., Aug. 1886, 22-37. Burgess' salary was fixed at Rs. 1,500, the total sanctioned cost of the Survey being Rs. 89,540.

[3] Note on the Archaeological Survey of India, 9 Feb. 1889, Rev. and Agri., Arch., Jun. 1890, 1-30; Burgess to Government of India, 27 Jan. 1886, Home, Arch., Aug. 1886, 22-37.

major operation undertaken by him was the digging up of the Kankālī Ṭīlā mound at Mathurā between 1887 and 1888. Yet, this in itself was a great achievement, as the effect of the excavation, which brought to light a plethora of sculptures bearing dated inscriptions, was not only to open up a new world for the Indian archaeologist but to make him for the first time alive to the value of deep and extensive digging. But Burgess did more than this. Although he was ignorant of the scientific techniques available in his time, he was clear-sighted enough to insist on a professional control of excavation and to press for official measures that would illegalize any digging, except those which the Archaeological Survey itself conducted.[1] He was also the first man to devote himself strenuously to the task of ridding India of robbers and art-collection touts masquerading as antiquarians. In 1886 he succeeded in inducing the Government to issue two directives, one debarring public officers from disposing of, without official approval, antiquities found or acquired by them;[2] the other forbidding the digging up of ancient remains of any kind without the previous consent of the Archaeological Survey.[3] Burgess wanted to follow this up by an amendment of the Treasure Trove Act which would make it unlawful to export antiquities without an official permit;[4] but nothing tangible came out of this laudable endeavour. To the field of epigraphy Burgess rendered a signal service by starting in October 1888 a quarterly publication *Epigraphia Indica*, of which he was able to bring out, in two years' time, as many as eight fascicules containing highly valuable inscriptions edited by great epigraphists like Bühler, Kielhorn and Eggeling. Earlier he had compiled a volume of Tamil and Sanskrit inscriptions, and his colleague, E. Hultzsch, collected and edited a mass of south Indian epigraphic records sufficient to fill three large volumes. A good feature of Burgess' archaeological administration was that he laid special emphasis on the enlisting of native talents in the discovery and translation of inscriptions and training them up in the technique of epigraphical researches.

In bringing out the results of his investigations Burgess followed a system somewhat different from Cunningham's. Instead of publishing periodical reports of his discoveries at the time they were made, he preferred to keep his materials with him till enough had been collected and studied to enable the production of a complete monograph that would present an exhaustive and authoritative treatment of the subject under enquiry. By this means he was able, within fifteen years, starting from his first assumption of duties in western India, to produce no less than twenty magnificent volumes, of which seven formed part of the *Archaeological Survey of India, New Imperial Series*. But he was attempting what was perhaps beyond the capacity of any single man, and in February 1889, about eighteen months before his due date of retirement, he found himself encumbered with a huge mass of material sufficient to fill twelve large volumes in the *New Imperial Series* and one of the *Epigraphia Indica*.[5] Criticized for the 'arrears' and convinced that there was no prospect

[1] Burgess to Government of India, 27 Jan. 1886.

[2] Resolution no. 5-95-113, 15 Mar 1886.

[3] Burgess to Government of India, 10 Mar. 1886; P. W. Circular no. 4, 8 Sep. 1886, Home, Arch., Nov. 1886, 5-8.

[4] Memorandum by Burgess and Keith in Rev. and Agri., Arch., Apr. 1889, 3. The only outcome of the effort was that the Government agreed to issue a Resolution and Circular, 24-4-2 Arch., Rev. and Agri., 28 Mar. 1889, calling attention of Local Governments to the relevant provisions of the Treasure Trove Act.

[5] These were: two reports by Führer and Smith on N.-W. Provinces; three reports by Rodgers on Panjab; reports by Rea on Kānchī, Mahābalipuram, Hampi, etc.; reports by Burgess on Ahmedabad, Broach, Dholkā, etc.; and reports by Cousens on Chāḷukya architecture, on Bījāpur and on the architecture of north Gujarat. Memorandum by Burgess, 23 Feb. 1889, Rev. and Agri., Arch., Jun. 1890, 1-30.

of liquidating them by the scheduled date, Burgess withdrew from service on the 1st June 1889 to be able to concentrate on the publication-work.[1] For the future arrangement of archaeological work in the country he submitted a plan to the Government, in which he estimated that the survey of south India would need about eight years to complete and that of west India a year's time only, while more than five years' work awaited the archaeologists in each of the four areas into which he would like to see the rest of the country archaeologically divided; viz. Rājpūtānā with Sind, Panjab, Central India, and the North-Western Provinces with Oudh. Bengal was omitted, as it was considered to have already been satisfactorily surveyed. There was no necessity in his view to maintain an elaborate machinery for carrying on the residuary work, and he suggested the retrenchment of the Director General's office and the reduction of the entire Survey to two independent parties, one working under Cousens and the other under Rea. The Panjab and Bengal Surveys were to be eliminated altogether, and the services of Cousens and Rea were to be made available for operations in the north as soon as they could be spared from the work they had in hand. For the whole of north India he wanted an additional 'architectural archaeologist', who, besides conducting minor surveys, would be responsible for conservation-work. He also urged that Hultzsch should continue to be in charge of south Indian epigraphy, but on an enhanced scale of pay, while Führer should be retained in the North-Western Provinces as a general antiquarian and epigraphist to provide the complement of Hultzsch's work for north India.[2] The scheme received a ready welcome from the Government, who, influenced by the adverse comment of the Finance Committee on the high cost of archaeology, had already agreed in 1888 to a policy of drastic reductions.[3] The new policy led to the virtual disappearance of the Archaeological Survey as a central body and was a reversion to the chaos and disorganization of the pre-Cunningham era. The whole of India was denuded of its archaeological staff, barring two Surveyors in the west and the south, raised now to the status of Superintendents,[4] pursuing their separate aims independently of each other, and a third, Führer, who was entrusted with the vague duties of general antiquarian and epigraphical research and whose relations with the other Surveys remained ill-defined. Even Burgess' proposal for an architect-curator for north India was rejected, and E. W. Smith, whom he had nominated for the post, was placed under Führer as his assistant. Not only the work of conservation but the entire executive direction of survey-operations relapsed into the hands of the Provincial Governments. The only redeeming feature of the new system was the retention of Hultzsch as the Government Epigraphist in Madras for a further term of three years, but his office was made independent of the south Indian survey. Even in this drastically reduced shape the Survey-establishments were sanctioned only for five years (from the 1st October 1890), and Lord Cross, the Secretary of State, while approving of the scheme, expressed the hope that by the end of that period the survey-work would, so far as the Government was concerned, be generally completed.[5]

[1] Burgess to Government of India, 20 Jan. 1888; 17 Oct. 1888; 25 Feb. 1889; 17 Apr. 1889, *ibid.*

[2] Notes, 9, 16, 18, 19, 20 Feb. 1889, *ibid.*

[3] Resolution no. 2-5-60, 5 May 1890; Arch. Desp. to London, 13 May 1890, *ibid.* The total cost of archaeology was estimated to be about Rs. 56,000, which was to be distributed as follows: Cousen's party, Rs. 12,870; Rea's party, Rs. 12,200; Smith's pay, Rs. 3,000; Epigraphy, Rs. 12,700; and publications by Burgess, Rs. 15,000.

[4] Government of India to Madras Government, 27 May 1891, and to Bombay Government, 8 Jun. 1891, Rev. and Agri., Arch., Jul. 1891, 35-48.

[5] Desp. no. 50, 10 Jul. 1890, *ibid.*

8. TIME OF TROUBLES

Burgess' withdrawal was followed by a period of utter bleakness and gloom, which neither his own attractive publications on the Muhammedan architecture of Gujarat and Ahmedabad nor the brilliant achievements of some of his successors, particularly of Führer at Kankālī Ṭīlā and of E. W. Smith at Agra and Fatehpur Sīkrī could help any way to relieve. Hultzsch continued to make solid contributions to south Indian epigraphy by bringing out more volumes of inscriptions, and, in 1892, on Burgess' giving up the charge of the *Epigraphia Indica*, steps were taken to give it a new lease of life by arranging to issue it under Hultzsch's editorship as a supplement to the *Indian Antiquary*.[1] But the hope of completing the epigraphical programme within the scheduled time seemed as distant as ever, and Hultzsch's term, which expired in 1893, had to be further extended for five years.[2] The outlook for survey and exploration was hardly more encouraging, and there was little prospect of the time-table dictated by Lord Cross being even remotely adhered to. Excavation was accorded a most cavalier treatment, which succeeded in drawing forth spirited protests from scholars of eminence like Hoernle, Grierson and Bühler, who ceaselessly went on urging that thorough and extensive digging was the only means by which India's past history could be placed on a solid and sound basis.[3] Conservation hardly fared better except perhaps in the North-Western Provinces, where, thanks chiefly to the personal initiative of a succession of able Lieutenant Governors, a vigorous repair-programme was being pursued. Listing of monuments continued to be far behind the schedule, and where such lists existed they were often found to be incomplete or defective.[4]

When, at last, in 1895 the Government of India came to take stock of the situation, they were almost frightened by the sheer volume of work remaining to be done. On a suggestion from the Secretary of State they had already made a move to transfer the entire work to the Asiatic Society of Bengal.[5] But the latter having refused to accept the responsibility, the Government were forced to the view that the direction of archaeological work by private enterprise was out of the question, and that the work must be continued by the Government if it was to continue at all. The matter was debated for a considerable time, in the course of which they were able to weigh the views not only of the Provincial Governments[6] but of such learned bodies as the Royal Asiatic Society and of scholars like Tawney, Bühler and Fleet, and it was not until 1898[7] that they were in a position to submit

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[1] Rev. and Agri., Arch., May 1892, 59-61; Aug. 1892, 147-171.

[2] *Ibid.*, Jun. 1893, 4-11.

[3] Bühler to Grierson, 9 Nov. 1894; Hoernle to Government of India, 21 Nov. 1894; Grierson to Government of India, 5 Jan. 1895, Rev. and Agri., Arch., Jul. 1895. 1-5.

[4] The most significant event which may be recorded about this period took place in 1891, when Sir Charles Close (then a Lieutenant in the Survey of India) suggested that balloons fitted with cameras should be used for photographing archaeological sites near Agra. The scheme, though approved by the Surveyor General of India, eventually produced no more than a few aerial photographs of Calcutta. G. E. Daniel, *A Hundred Years of Archaeology* (London, 1950), p. 295.

[5] Desp. no. 46, 14 May 1891, Rev. and Agri., Arch., Jun. 1891, 5-8; Government of India to Asiatic Society of Bengal, 19 Jun. 1894; A. S. B. to Government of India, 5 Jan. 1895, Rev. and Agri., Arch., Jan. 1895, 1-5.

[6] E. D. Maclagan's note, 1 Mar. 1895; Ibbetson's note, 12, Apr. 1895; Elgin's Minute, 10 May 1895; Government of India Circular, 27 Jun. 1895 to all Local Governments, Rev. and Agri., Arch., Jul. 1895, 6-13.

[7] Rev. and Agri., Arch., Desp. to London, no. 31, 16 Jun. 1898, Rev. and Agri., Arch., Jul. 1898, 10-29.

for the consideration of the Secretary of State their final proposals for the re-organization of archaeological work in India. In the scheme that was drawn up, provision was made for five circles with an Archaeological Surveyor in charge of each, viz. Bombay with Sind and Berar; Madras and Coorg; Panjab, Baluchistan and Ajmer; North-Western Provinces and Central Provinces; Bengal and Assam. The machinery of the Central Government being considered unsuitable for executive supervision, the Surveyors were placed under the control of the Local Governments first named in the circle-designations thus devised, while the Survey-expenditure was charged to the Imperial revenues except in the case of Madras, where, since 1890, it had been a provincial charge. The new Survey-Circles were required to devote themselves entirely to conservation-work, which, in the Government's view, was the first aim of archaeology. Excavation they viewed as only a secondary objective, and they announced that the limited funds they were justified in spending should primarily be applied to the preservation of existing materials rather than to the exploration of what was unknown. The new scheme, however, made a much more generous provision for epigraphy, though the Government's original idea had been to keep in abeyance the post of Epigraphist and the publication of the *Epigraphia Indica* and to relegate the work to private enterprise. But the latter view was so strongly contested both by Local Governments and by private authority that it had ultimately to be abandoned. The Madras Government pointed out that Dr. Hultzsch and his staff were the only people living who were able to decipher the old Tamil inscriptions and that epigraphy was not only a subject of scientific interest and importance in which the learned alone were much interested but also one which might throw useful light on many problems of administration. It was therefore decided to make the post of Epigraphist permanent so long as Dr. Hultzsch continued to hold it. But as he was emphatically a specialist in the south Indian inscriptions, the Government proposed to encourage the appointment of Honorary Epigraphists in other provinces and to relax Hultzsch's editorial monopoly by authorizing them to edit inscriptions for publication in the *Epigraphia Indica.*

The whole of the scheme was sanctioned by the Secretary of State on the 18th May 1899.[1] One good feature of it was that it made service in the Archaeological Survey pensionable for all who had joined the Survey before that date.[2] But it suffered from a number of defects. It completely ignored the value of excavation and left all initiative and responsibility in the hands of the Local Governments, particularly in respect of conservation. The Survey was allowed to remain without any kind of leadership whatever.

9. THE DAWN OF A NEW ERA

A new era dawned for Indian archaeology with the arrival on the scene of Lord Curzon, in whom the intellectual movement set in motion by the provocative writings of Bühler, Hoernle and others found its ablest and most enthusiastic champion. Curzon's attention had been drawn to the problem by Lord Reay as early as November 1898,[3] when he was still in England, and one of his first acts on the assumption of the Viceregal office was to commence a personal study of the operation of the existing system in every province of India. By September 1899 he had gathered enough material to convince him that it was 'impossible to conceive a system more chaotic or futile in practice'. He recorded in

[1] Desp. 114 (Rev.), 18 May 1899.
[2] Arch. Circular 2628-41-6, 2 Aug. 1899.
[3] Letter, 26 Nov. 1898, Rev. and Agri., Arch., Jan. 1901, 5.

a Minute on the 23rd September that 'the whole country is supposed to be divided into five circles with an Archaeological Surveyor for each. The geographical arrangement of these circles is fantastic in the extreme. Sind is lumped together with Bombay and Berar; Baluchistan is tacked on to the Panjab, and Ajmer is casually thrown in. The Central Provinces are added to the North Western Provinces . . . Bengal . . . has no surveyor. The surveyors in the remaining circles, instead of being scholars, or even engineers, are merely, as their name implies—surveyors, who make drawings, and write reports, but can only at a considerable risk be entrusted with the task of renovation or repair.

'In practice, too, the most whimsical difference prevails between the policy adopted in different provinces. No Local Government is *per se* interested in archaeology. It is occupied with grosser and more material concerns. The result is that the progress or suspension of archaeological work, the decay of priceless treasures of art, the restoration, sometimes involving the prostitution of exquisite palaces and halls—all depend upon the taste, or interest, or caprice of the Local Governor, who, if in a few rare cases he exerts himself in the cause of art and good taste, may on the other hand, if he chose, leave an indelible and fatal mark upon the monuments of his province, or more frequently, be content with leaving no mark at all.

'Thus it has come about that owing to the absence of any central and duly qualified advising authority, not merely are beautiful and famous buildings crumbling to decay: but there is neither principle nor unity in conservation or repair, while from time to time horrors are still committed that make the student shudder and turn grey . . .

'The continuance of this state of affairs seems to me little short of a scandal. Were Germany the ruling power in India, I do not hesitate to say that she would be spending many lakhs a year on a task to what we have hitherto rather plumed ourselves on our generosity in devoting Rs. 61,000, raised only a little more than a year ago to 88,000 . . .

'When I reflect upon the sums of money that are gaily dispensed for the construction of impossible forts in impossible places, which are to sustain an impossible siege against an impossible foe, I do venture to hope that so mean a standard may not again be pleaded, at any rate in my time.'[1]

These noble reflections found concrete expression in a set of definite proposals submitted to the Secretary of State on the 20th December 1900, the chief of which was to eliminate the existing lack of responsibility and system. Arguing for the proposals Curzon's Government pointed out that it was indefensible that the Government should divest themselves of all responsibilities for the preservation of monuments, which, in the words of Lord Lytton, were 'for variety, extent, completeness and beauty unsurpassed, perhaps unequalled in the world', and that the Government of India, not the Local Administrations, would always be held in the judgment of the civilized world primarily responsible for maintaining intact this great inheritance. They considered it unsafe to trust that the subordinate governments would always be willing or able under the pressing exigencies of provincial finance to devote funds to it. They were satisfied that the existing Archaeological Surveyors were insufficiently equipped with archaeological, scholarly or professional knowledge to act as independent advisers or investigators and that they required to be guided and controlled if their activities were to lead to any useful results. The Government, therefore, recommended the revival of the post of the Director General, the incumbent of which was to be a trained explorer combining

[1] Letter, 26 Nov. 1898, Rev. and Agri., Arch., Jan. 1901, 5.

archaeological knowledge with engineering skill. He was required to exercise a general supervision over all the archaeological work of the country, whether it was that of excavation, of preservation or of repair, of epigraphy, or of the registration and description of monuments and ancient remains. He would co-ordinate and bring up-to-date the local surveys and reports and should in addition present to Government an annual report of his work. The Government also pressed for an annual sum of a lakh of rupees for a term of years to be expended in grants-in-aid for the archaeological work of special importance and magnitude.

The proposals were sanctioned by the Secretary of State on the 29th November 1901[1] experimentally for a five-year term, and, on a recommendation from the British Museum, John Marshall, who had already worked in Greece, south Turkey and Crete, was selected for filling the new post of Director General.[2] In the Resolution announcing the appointment it was declared that the most important function of the Director General was to secure that the ancient monuments of the country were properly cared for, that they were not utilized for purposes which were inappropriate or unseemly, that repairs were executed when required and that any restorations which might be attempted were conducted on artistic lines. He was to assist the regional Surveyors in ascertaining and formulating the special requirements of each province and to advise the Government of India as to the operations for which subsidies might be allotted from Imperial funds. He was to visit all the circles in succession, succinctly reporting the general results of his tour to the Government of each province visited and offering any suggestion that he might have to make in connexion with the buildings he had inspected. He was, finally, to exercise a professional control over all his colleagues and to maintain a continuous record of the needs of the various provinces and of the action taken to meet them.[3] Although conservation was accorded the first place in the new programme, Lord Curzon was clear-sighted enough to visualize that 'it is in the exploration and study of purely Indian remains, in the probing of the archaic mounds, in the excavation of old Indian cities and in the copying and reading of ancient inscriptions that a good deal of the . . . work of the archaeologists will in future live'. 'Epigraphy', he announced in a speech delivered before the Asiatic Society of Bengal on the 6th February 1900, 'should not be set behind research any more than research should be set behind conservation. All are ordered parts of any scientific scheme of antiquarian work. I am not one of those who think that Government can afford to patronize the one and ignore the other. It is, in my judgment, equally our duty to dig and discover, to classify, reproduce and describe, to copy and decipher and to cherish and conserve.'

Such then was the mighty task which Curzon had mapped out for the reconstituted Archaeological Survey. It was not all his fault that all the means, in men as well as money, required to implement it, could not be made available to the new Director General, who was in addition burdened with a cumbersome administrative machine derived from an impossible system which it had been the Viceroy's most cherished desire totally to scrap. The actual work of conservation, as in the days of Burgess, was still wholly in the hands of the Provincial Governments, whom the Director General could advise but could not guide. The regional surveyors were under his control only professionally, but administratively they continued to be accountable to the Local Administrations. The picture was indeed very different from what the Viceroy had conceived in his Minutes and speeches. But Curzon had to fight against many heavy odds, and it is not surprising that he failed

[1] Desp. (Rev.) no. 184, 29 Nov. 1901.
[2] Agreement between J. H. Marshall and the Secretary of State, 23 Dec. 1901.
[3] Resolution no. 542-6-11, 21 Feb. 1902.

to overcome many of the prejudices inherited from a long-established tradition. All his colleagues did not see eye to eye with him, and even the authorities in England were strongly opposed to complete centralization. But one should not be squeamish. Curzon may be accused of a number of omissions. But he had fought and won one of the most difficult battles ever waged for Indian archaeology. No other ruler of India before or after him has evinced so single-minded a devotion to the cause of archaeology, and, when all is said, it has to be admitted that he succeeded in rekindling an archaeological conscience in the country and placing the Archaeological Survey of India for the first time on a sound and secure foundation. How this foundation was gradually built upon by the new Director General and a solid and imposing structure came to be raised on it belongs to more recent history and is narrated in the article which follows.[1]

[1] Among the significant literature on the early history of Indian archaeology, mention may be made of the following: C. Markham, *Memoir of the Indian Surveys*, 2nd ed. (London, 1878), ch. XV; 'Ancient India', *Quarterly Review* CLXIX (1889); A. Cunningham, *Arch. Surv. Ind.*, I, Introduction; James Gibbs, 'History of Archaeology in India', *Jour. Soc. Arts*, XXXIV (1886), pp. 555 ff.; Gustave le Bon, *Les Civilizations de l'Inde* (Firmin-Didot, Paris, 1887); A. F. Rudolf Hoernle in *Centenary Review of the Asiatic Society of Bengal*, chiefly pt. II; G. Bühler, 'Some notes on past and future archaeological explorations in India', *Jour. Roy. Asiatic. Soc.*, 1895, pp. 649 ff.; C. E. D. Black, *Memorandum on the Indian Surveys 1875-1890* (London, 1891), ch. XV; 'A short history of the Archaeological Department and its connexion with, and the work done by, the Public Works Department of the North-Western Provinces and Oudh', *An. Prog. Rep. Arch. Surv. Dept. Ind., N.-W. Provinces and Oudh Circle*, 1899-1900 (Oct. 1900); T. W. Holderness' unpublished note, 18 Mar. 1899, in Rev. and Agri., Arch., Jan. 1901, 5; J. Marshall in *An. Rep. Arch. Surv. Ind.*, 1902-03 (1904), an abridged version of which appeared in J. Cumming, *Revealing India's Past* (London, 1939), pp. 1-13; J. Burgess, 'Sketch of archaeological research in India during half a century', *Jour. Bombay Branch Roy. Asiatic Soc., The Centenary Memorial Volume* (1905), pp. 131-48; N. P. Chakravarti, 'The story of Indian archaeology', *Archaeology in India* (Delhi, 1950), pp. 1-15.

FIFTY YEARS OF THE ARCHAEOLOGICAL SURVEY OF INDIA

By A. GHOSH

CONTENTS

1. RETROSPECT

THE foregoing article will have amply shown the wavering nature of the archaeological policy of the Government in the nineteenth century even after the acceptance of ancient monuments as a responsibility of the State. The extent of that responsibility had been variously defined on different occasions. For example, at times it was thought that it would be sufficient if photographic or other copies of a few monuments were prepared. In 1862 the objective of the new Archaeological Survey was 'an accurate description—illustrated by plans, measurements, drawings or photographs and by copies of inscriptions—of such remains as deserve notice'. In 1870 the same definition was elaborated as 'a complete search over the whole country and a systematic record and the description of all architectural and other remains that are remarkable for their antiquity or their beauty or their historical interest'. To Burgess, archaeology was but the history of art, and during his time architectural studies received greater attention than before. The persistent belief that the archaeological work in this country could be completed within a specified time precluded even a remote proposal of placing the Survey-organization on a permanent footing. Both Cunningham and Burgess recommended, while finally leaving India, the abolition of the post of the Director General of Archaeology—proposals which were readily accepted. Another question on which no decision was ever reached was the respective responsibility of the Imperial and Local Governments. Even after Lytton declared in 1878 that he could not 'conceive of any claims upon the administrative initiative and financial resources of the Supreme Government more essentially imperial' than the preservation of the national antiquities and works of art, hardly any concrete steps were taken to make the imperial responsibility effective. When, in 1886, a unification of the three Surveys of northern, southern and western India and of the three functions of survey, conservation and epigraphy was partly effected under Burgess, the complicated administrative machinery rendered the scheme virtually infructuous.

In spite of this, a stock-taking of the archaeological work done in the country by the close of the last century would reveal that its outcome had not been negligible. Apart from the *Archaeological Survey of India Reports* of Cunningham,[1] several regions had their topographical lists of monuments and remains.[2] The studies of Burgess and his colleagues on the architecture of monuments had been made available in sumptuous volumes.[3] Though excavation of ancient sites had never been defined as one of the functions of the Survey, Cunningham and his associates, and even Burgess, had conducted, albeit in an amateurish way, excavations at a large number of sites, the proceeds of which enriched museums both in India and abroad. Cole's reports on the preservation of national monuments had defined the lines on which some monuments of outstanding importance were to be conserved.[4] Cole had, in 1882-83, also divided the monuments into three classes, which remained the basis for classification till 1919, when it was slightly modified to meet changed circumstances.[5] In the field of epigraphy, two volumes of *Corpus Inscriptionum Indicarum*,[6] six volumes of *Epigraphia Indica*,[7] and two volumes and four parts of the third volume of the *South Indian Inscriptions*[8] had been published, bespeaking the steady and scholarly labour of the epigraphists. Thus, survey, excavation, preservation of monuments and of antiquities and epigraphy had already won place, if vaguely and indirectly, in the antiquarian activities in the country. The declaration of the bold principle by Lord Curzon in 1900 that 'it is, in my judgment, equally our duty to dig and discover, to classify, reproduce and describe, to copy and decipher and to cherish and conserve' finally laid down what was expected of the Archaeological Survey of India that was remodelled shortly afterwards.

On the administrative side, in spite of Curzon's own strong feelings about Centralization, what was actually done was a compromise between the respective jurisdictions and responsibilities of the Government of India and Local Governments. The regional Surveys, while coming under the technical control of the Director General of Archaeology, appointed by the Government of India under Curzon's scheme, were still to remain under the administration of the Local Governments. In addition to the professional advice

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[1] *Archaeological Survey of India Reports*, I-XXIII (Simla-Calcutta, 1871-87).

[2] R. Sewell, *List of Antiquarian Remains in the Presidency of Madras*, I, New Imperial Series (N.I.S.), VII (Madras, 1882); A. Führer, *Monumental Antiquities and Inscriptions in the N.-W. Provinces and Oudh*, N.I.S., XII (Allahabad, 1891); J. Burgess and H. Cousens, *Revised List of Antiquarian Remains in the Bombay Presidency etc.*, N.I.S., XVI (Bombay, 1897); A. Rea, *List of Architectural and Archaeological Remains in Coorg*, N.I.S., XVII (Madras, 1894); H. Cousens, *Lists of Antiquarian Remains in the Central Provinces and Berar*, N.I.S., XIX (Calcutta, 1897); H. Cousens, *List of Antiquarian Remains in His Highness the Nizam's Territories*, N.I.S., XXXI (Calcutta, 1900).

[3] The volumes are published in Archaeological Survey of India, New Imperial Series.

[4] H. Cole, volumes published as *Preservation of National Monuments* (Simla-Calcutta, 1881-85).

[5] Resolution dated 21st February 1919, Education A, Archaeology and Epigraphy (referred to below as A. and E.), Mar. 1919, 14-17. The classification is as follows: I, those monuments which from their present condition or historical or archaeological value ought to be maintained in permanent good repair; II, those monuments which it is now only possible or desirable to save from further decay by such measures as the eradication of vegetation, the exclusion of water from the walls, and the like; and III, those monuments which, from their advanced stage of decay or comparative unimportance, it is impossible or unnecessary to preserve.

[6] A. Cunningham, *Inscriptions of Asoka*, Corpus Inscriptionum Indicarum, I (Calcutta, 1877); J. F. Fleet, *Inscriptions of the Early Gupta Kings and their Successors*, C.I.I., III (Calcutta, 1888).

[7] The first two volumes were published in N.I.S., XIII and XIV (Calcutta, 1892-94). The subsequent volumes, III-XIX (1894-1919), were called Supplements to the *Indian Antiquary*.

[8] In N.I.S., IX, X and XXIX (Madras, 1890-99).

of the Director General, the Government of India were to help the Local Governments by giving grants-in-aid of not less than one lakh of rupees per year[1] for archaeological work of special importance and magnitude, the rest of the expenditure being met out of Provincial funds.[2]

The duties expected of the new Director General, Mr. John Marshall,[3] were as follows: 'The most important of his functions is to secure that the ancient monuments of the country are properly cared for, that they are not utilized for purposes which are inappropriate or unseemly, that repairs are executed when required and that any restorations, which may be attempted, are conducted on artistic lines. But his duties extend to the exercise of a general supervision over all archaeological work in the country, whether it be that of excavation, or preservation, or repair, or of the registration and description of monuments and ancient remains, or of antiquarian research; he is to assist the provincial Surveys in ascertaining and formulating the special requirements of each Province; and to advise the Government of India as to the operations for which special subsidies may be allotted from Imperial funds. He is to co-ordinate and bring up to date the local Survey and reports; and he is to submit annually to the Government of India a report on the progress effected during each financial year.'[4]

2. 1902–1906

Marshall reached India on the 22nd February 1902 and lost no time in establishing an effective hold over the archaeology of the country. It would be going into avoidable details if we were to recount here, year by year, the work of excavation and conservation either undertaken by him directly or conducted under his advice, for such details are readily available in the *Annual Reports of the Archaeological Survey of India* and the *Annual Reports* of the Provincial Surveys.[5] His 'Note on the operations and future conduct of the Archaeological Survey', dated the 6th April 1903, shows that within a year he had formulated definite principles about excavation, conservation and museums, which were generally accepted by the Government in their Resolution dated the 7th July 1903.[6] He realized that the prime need at that time was conservation and excavation, and he deprecated the spending of undue time by the archaeological officers on literary research.

[1] Resolution 7-6-12, dated 11th February 1902, which also announced the appointment of the Director General. In the earlier years the grants-in-aid allotted out of this amount included, besides conservation and excavation, assistance to the Indian Museum and the Lahore, Lucknow, Bombay and Madras Museums. Revenue and Agriculture (referred to below as Rev. and Agri.), A, A. and E., Feb. 1903, 37-50. (This and similar references in the following pages are to the records preserved in the National Archives of India.)

[2] Curzon himself, in his Minutes dated 24th August 1902, recorded: 'I do not entertain a doubt that it is essential that the expenditure should remain provincial' (Home, A. and E., Jan. 1906, 17).

[3] Knighted in 1915.

[4] *An. Rep. Arch. Surv. Ind.*, 1902-03 (1904), pp. 10 and 11.

[5] The Provincial reports were published as follows: *Rep. Arch. Surv. Work in the N.-W. F. Province and Baluchistan*, 1904-05 to 1920-21 (Peshawar, 1905-22); *An. Prog. Rep. Supdt. Arch. Surv. Punjab and Northern Circle*, 1901 to 1920-21 (Lahore, 1902-22); *An. Prog. Rep. N.-W. P. and Oudh* (later on *U.P.*) *Circle*, 1887-88 to 1920-21 (Allahabad); *An. Prog. Rep. Arch. Surv., Southern Circle, Madras*, 1881 to 1920-21 (Madras, 1881-1921); *An Rep. Arch. Surv. Bengal* (later on *Eastern*) *Circle*, 1900-01 to 1902-21 (Calcutta, 1901-22); *An. Rep. Arch. Surv. Central Circle*, 1919-20 and 1920-21 (Patna, 1920-21).

[6] Rev. and Agri., A, A. and E., Aug. 1903, 11-13. Marshall's own summary of this note may be seen in *An. Rep. D. G. Arch.*, 1902-03, pt. i (1904), pp. 1-3.

About conservation he laid down that (a) hypothetical restorations were unwarranted, unless they were essential to the stability of a building; (b) every original member of a building should be preserved in tact, and demolition and reconstruction should be undertaken only if the structure could not be otherwise maintained; (c) restoration of carved stone, carved wood or plaster-moulding should be undertaken only if artisans were able to attain the excellence of the old; and (d) in no case should mythological or other scenes be re-carved. These rules have essentially governed the conservation-works of the Survey till the present day. About excavations Marshall felt that should excavations by such an international body of scholars and trained explorers as the International Indian Exploration Fund, inaugurated in 1898,[1] become practicable, the Government might be content to let much of this work rest in their hands,[2] but in the meantime 'we shall endeavour to rescue any sites in danger of destruction and carry forward general exploration on a limited scale . . . The many adverse criticisms levelled at Indian excavations in the past should make us doubly careful not to add to the examples of unscientific work'. Museums figured prominently in his scheme, and he strongly felt that Government archaeologists should be given some official position in the chief provincial museums. Epigraphy, he observed, should primarily be the duty of the Government Epigraphist and not of the other officers of the Survey, and Dr. Ross of the Madrasa College, Calcutta, should be entrusted with Arabic and Persian inscriptions. The *Annual Reports* of the Director General were to consist of two parts, the first purely official and the second, with a wider scope, aiming 'at supplying the public with interesting and readable accounts of the progress of archaeological research in India. It will contain clear and accurate accounts of the works of restoration and preservation of important buildings and sites, of excavations and fresh discoveries and will be illustrated. It will also give a résumé of the epigraphical, numismatic, exploratory and other work of the Department, compiled from the special reports of the Provincial Surveyors and from personal observation'. The Resolution referred to above (p. 32) also impressed upon Local Governments not to allow excavations by incompetent persons, 'for it is infinitely better to leave antiquities underground till such (experienced) supervision is available than to destroy in digging them out half the evidence which they might afford'. Marshall from the very beginning laid emphasis on the necessity of building up a good library for the Survey and even in 1903-04 made a provision of Rs. 4,000 for the purpose.[3]

[1] In 1898 the Eleventh Congress of Orientalists proposed the formation of an 'India Exploration Fund', which was recommended by the Royal Asiatic Society of Great Britain and Ireland, and forwarded the proposal to the Secretary of State. The Government of India welcomed the proposal on condition that no exploration would be undertaken without their consent and that the objects discovered would belong to the Government, only duplicates being taken away, on the analogy of the regulations obtaining in Greece and Italy. In this connexion it was suggested that the Treasure Trove Act of 1878 should undergo some amendments (which, had they come through, would have added to its effectiveness), but Elgin thought that 'we are perhaps going a little too fast' (Rev. and Agri., A, A. and E., Jul. 1898, 31 and 32). The consideration of the foreign regulations led to the idea of having legislation in India itself (*ibid.*, Nov. 1901, 1 and 2), and this ultimately culminated in 1904 in the Ancient Monuments Preservation Act (below, p. 33).

[2] Curzon's remark on this proposal was: 'I devoutly hope not. The last thing that we want is the continental enthusiast with a spade in his hand. Let us excavate our own sites.'

[3] The Central Archaeological Library has now grown into an institution unique of its kind in India, with some forty thousand books and volumes of periodicals on Indology and history, archaeology, etc., of different parts of the world. No efforts are spared to keep it up to date. Writing in 1939, Marshall called it 'the best archaeological library in India, perhaps in Asia', J. Cumming, *Revealing India's Past* (London, 1939), p. 31. If it was so fourteen years back, it is much more so today.

An effective care of monuments such as was contemplated under the régime of Curzon presupposed the assumption of some legal powers by the Government, particularly in regard to those which were owned by private parties. In 1898 Lord Elgin had obtained from the Secretary of State the regulations about monuments and antiquities obtaining in Greece and Italy. The Government of India became particularly alive to the question when their notice was drawn to the rifling of the Buddhist remains in the Swat valley and the attempt made by an adventurer, under the pretext of a mission from a foreign scientific society, to remove certain wall-paintings from Pagan and 'drafted a brief bill based on the existing English Acts and embodying certain provisions which have found place in recent legislation in regard to antiquities in Greece and Italy'. The Government of Bengal had indeed independently taken up the question of legislating on the subject in 1900; its provisions were utilized in the draft bill, which was circulated to all Local Governments, Collectors, Commissioners and Archaeological Surveyors for remarks. Voluminous comments were received from all quarters,[1] and after taking them into consideration, the Government sent the draft to the Secretary of State for approval on the 28th May 1903, assuring him that 'we desire, as far as possible, to avoid all resort to compulsory proceeds, and we think that the bill we have prepared will enable us to attain the objects in view without recourse to action that might be resented as oppressive'.[2] The Secretary of State, in his Despatch of the 14th August 1903, having given his consent, the Ancient Monuments Preservation Act was passed in 1904 'to provide for the preservation of ancient monuments, for the exercise of control over traffic in antiquities and over excavation in certain places and for the protection and acquisition in certain cases of ancient monuments and of objects of archaeological, historical or artistic interest'.

It may be recalled that in 1899 the Secretary of State, in his Despatch dated the 18th May 1899, had sanctioned an archaeological organization of five circles and an epigraphist for a period of five years (above, p. 25). In 1902 it was decided to appoint an architect for Muhammadan buildings in north India and at the same time to extend the jurisdiction of the Panjab Survey over the United Provinces in respect of archaeological work other than architecture. It was also decided to attach Rajputana and the Central Provinces to the Bombay Circle and to give an Assistant to the Surveyor there.[3] As the period of five years, for which the scheme had been sanctioned, was about to expire, Marshall, in his note dated the 18th April 1904, pleaded for the retention of the Survey on a permanent basis. 'I may', he said, 'refer at the outset to an illusory belief to which expression has often been given that a time would soon come when the Archaeological Survey might be disbanded and the work of conservation, if not complete, accomplished through the agency of the Public Works Department. That time has receded further year by year, and the phantom might now, once for all, be laid to rest . . . The work of the archaeological officers is of a kind which cannot be discharged by any other existing agency and it can only cease if the Government cease to admit their responsibility for the preservation of the ancient remains of the country.' This note was approved by the Government and forwarded to the Secretary of State on the 26th May 1904, recommending the retention of the Survey on a permanent basis and soliciting a temporary extension

[1] Of the comments the most interesting from our point of view were those by the Archaeological Superintendent of Madras, who rightly suggested that archaeological officers should be given some position in the Act, as not all District Magistrates, who were to be given wide powers, were likely to take interest in archaeological matters. This was ruled out, as 'Local Governments will naturally consult the Provincial Archaeological Surveyors. This need not be laid down in the Act'.

[2] Rev. and Agri., A, A. and E., Jun. 1903, 1-15.

[3] *Ibid.*, Feb. 1903, 1-6.

till the necessary consultations with the Provincial Governments were complete. The Secretary of State, in his Despatch dated the 29th July 1904, sanctioned the extension, still hoping that within ten or fifteen years a smaller staff would suffice, if it was necessary to retain the Survey at all.[1]

The question was further reviewed for more than a year, and on the 9th November 1905, the Government of India wrote to the Secretary of State that 'although the first object of the present operations of the Department—that is to say, the restoration of monuments of first-rate historical or archaeological importance—may be attained in 15 or 20 years, the permanent conservation of these and of monuments of secondary interest, the prosecution of exploration and research' and the administration of the Ancient Monuments Act will still render an Archaeological Department necessary' and that 'it is accordingly proposed that the establishment of the Department be placed on a permanent basis'.

Following the Despatch of the Secretary of State dated the 26th January 1906, approving the proposal, the Government of India, in their Resolution dated the 28th April 1906, announced that the Survey was placed on a permanent and improved footing. The appendix to the Resolution laid down the sanctioned strength of the Department and their respective jurisdictions as follows: Director General of Archaeology and Government Epigraphist (in lieu of the Government Epigraphist in Madras) for the whole of India; Superintendent of the Western Circle,[2] covering Bombay, Sind, Hyderabad, Central India and Rajputana; Superintendent of the Southern Circle, covering Madras and Coorg, and an attached Assistant Superintendent for Epigraphy; Superintendent and Archaeological Surveyor of the Northern Circle, covering the United Provinces, Panjab, Ajmer, Kashmir and Nepal;[3] Superintendent and Assistant Superintendent of the Eastern Circle, covering Bengal, Assam, Central Provinces and Berar (till now in the Bombay Circle); Superintendent of the Frontier Circle, covering the North-West Frontier Province and Baluchistan;[4] and Superintendent of the Burma Circle.[5]

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[1] Rev. and Agri., A, A. and E., Jun. 1904, 29-32.

[2] The temporary post of Assistant Superintendent, Western Circle, was to continue.

[3] The amalgamation of the Panjab and the United Provinces Circles and the appointment of two officers, one for Hindu and Buddhist monuments and the other with special architectural training, had been effected in 1903. *An. Rep. D. G. Arch.*, 1903-04, pt. i (1905), p. 1.

[4] In 1902 the Chief Commissioner and Agent to the Governor-General in the N.-W. F. Province proposed that Dr. Aurel Stein of the Indian Educational Service, previously Registrar of the Panjab University, Principal of the Oriental College, Lahore, and Principal of the Calcutta Madrasa, be appointed Inspector General of Education and Archaeological Surveyor for N.-W.F. Province and Baluchistan. The Secretary of State accepted the proposal as personal to Stein only (Rev. and Agri., A, A. and E., Jul. 1904, 24; Aug. 1904, 20). Stein joined his new appointment on the 2nd January 1904. The Panjab Circle was thus relieved of the charge of the N.-W.F. Province and Baluchistan. Stein had already undertaken an exploration in Chinese Turkestan in 1900-01. In 1904 he sought permisson to continue his exploration (Home, Education, pt. B, Mar. 1905, 43 and 44) and started once more for Central Asia in 1906. In 1909 the Government proposed to appoint him as special explorer. The Secretary of State did not agree to create any special post but had no objection to Stein being transferred to the Archaeological Survey (Home, A, A. and E., Feb. 1910, 11-17).

[5] Home, A, A. and E., Jul. 1906, 21-29. Mysore was omitted from the jurisdiction of the Survey as it had its own archaeological officer. The inclusion of other Indian States within the respective Circles was in general accordance with the decision arrived at in 1901 (Rev. and Agri., A, A. and E., Jun. 1901, 3 and 4). In 1906 it was felt necessary to restrict to a degree and to lay down a strict procedure for the visits of inspecting officers to the States (Home, Public, A, May 1906, 41 and 42).

3. 1906–1921

By 1906 the Survey had come into its own: it had been established on a permanent basis, its policies had been well-defined, and the Government had armed itself with legal powers for the preservation of monuments and care of antiquities. The strength of the superior staff remained virtually the same in the following years except the addition, in 1910, of an Assistant Superintendent for headquarters to enable the Director General to depute an officer from time to time to assist in the supervision of the Indian Museum. The formative period of the Survey being now over, our review of the subsequent period may be confined to only a few salient facts.

A conference of orientalists, held at Simla in July 1911, was somewhat critical of the activities of the Survey.[1] Exception was taken that archaeological information appeared in an English journal before it had been issued in India. It was also recommended that young Indians should be encouraged to learn the principles and practice of architecture so as to become private architects or occupy posts in the Department and that the appointment of competent Indians to the Department should be encouraged, for it was felt that no steps had been taken to bring forward Indian talent.[2]

In 1912 the Government were once more seriously considering the necessity of decentralizing certain Departments on financial and other grounds. So far as archaeology was concerned, the post of the Director General was to be abolished and replaced by a professor of archaeology, to be attached to a proposed oriental research institute. It was pointed out that the decision was not based on reasons of economy (in fact the Government were prepared to spend more on archaeology) but on grounds of efficiency. It is unnecessary to record here the details of this episode, and it would suffice to say that the Secretary of State, in his Despatch dated the 8th December 1911, finally declared that it would not be prudent to abolish the office of the Director General, and the Government created two scholarships for the training of Sanskrit scholars in addition to the two existing since 1903.

In 1915 Marshall prepared a note reviewing the archaeological progress in the country, which was published under Government Resolution dated the 22nd October.[3] It was a masterly summary of all branches of the activities of the Survey and laid down the policies that had guided them.[4]

The year 1917 saw an important addition to the technical strength of the Survey with the appointment of an Archaeological Chemist. Next year an Assistant Director

[1] *Conference of Orientalists including Museums and Archaeology Conference, July 1911* (Simla, 1911).

[2] In 1905 it had been decided that Superintendents were to be normally recruited in England and Assistant Superintendents in India (Rev. and Agri., A, A. and E., Mar. 1905, 3-10). The decision was not strictly adhered to, for in 1906 we find an Assistant Superintendent being recruited abroad. In 1911, it was reiterated that 'the branch in which Indian scholars have been most successful is epigraphy and that it would be inadvisable at present to hold out hopes for Indians to be employed in higher grades of the Department in a larger degree' (Edn., A, A. and E., Oct. 1911, 18-21). Shortly later, there was a proposal of separating the functions of conservation and research and entrusting each to either of the Circle officers, but it was ultimately ruled out (Edn., A, A. and E., Jun. 1913, 1-9).

[3] Edn., A, A. and E., Apr. 1916, 14-21.

[4] It was also published in a book-form, *Indian Archaeological Policy, 1915* (Calcutta, 1916). Of particular interest is the enunciation of the principles of conservation, which may be reproduced here. 'As to the policy which has been pursued in the treatment of these and other buildings, the Government of India are fully alive to the deplorable harm that may be done in the name of restoration, and,

General was appointed, his designation being changed to Deputy Director General in the following year.

The Montagu-Chelmsford Reforms of 1919 brought about noteworthy changes in the administration of archaeology as in other directions. The Devolution Rules of 1921, giving effect to the classification of subjects as contemplated in the Government of India Act, 1919, laid down archaeology as a Central subject.[1]

4. 1921-1928

The constitutional reforms had far-reaching consequences on the organization of the Survey. The expenditure on archaeology was now entirely Centralized. True, the Provincial Governments were still to remain in executive control of the archaeological staff, but they were to act only as agents of the Central Government in this behalf, and even that control was done away with in the next few years. The only archaeological function left with the Provincial Governments was the statutory power of declaring monuments protected.

In the same year the old Eastern Circle was renamed Central Circle, and a new Eastern Circle, with headquarters in Calcutta, was created.

Other reforms in the Survey were also forthcoming. The cadre of the Department was augmented by the addition of a Superintendent for Epigraphy, a Superintendent for the Archaeological Section, Indian Museum, two Assistant Superintendents for Epigraphy

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except in special circumstances, are opposed to its being undertaken. It is recognized, however, that there are considerations of a social, political and climatic character which must always be taken into account, and that in this country, in particular, it is impracticable to lay down one law which will be applicable to every case. Thus a distinction is drawn between the older Buddhist, Hindu and Jain edifices on the one hand, and the more modern erections of the Muhammadans on the other; and in the case of the latter the view is taken that a policy of limited restoration is sometimes not only desirable but justified on the ground that the art of the original builders is still a living art. It is held also, that in the case of monuments which are still serving the purpose for which they were built, whether they be Hindu temples or Muhammadan mosques or tombs or palaces where ceremonial functions are still performed, there are frequently valid reasons for resorting to more extensive measures of repair than would be desirable, if the buildings in question were maintained merely as antiquarian relics. With these reservations, however, the object which Government set before themselves is not to reproduce what has been defaced or destroyed, but to save what is left from further injury or decay, and to preserve it as a national heir-loom for posterity.'

[1] Entry 36 of the Central list. This should be read with entry 6 of the Provincial list, which was as follows: 'Public works included under the following heads, namely: . . . care of historical monuments, with the exception of ancient monuments as defined in section 2 (1) of the Ancient Monuments Preservation Act, 1904, which are for the time being declared to be protected monuments under section 3 (1) of the Act, provided that the Governor-General in Council may, by notification in the Gazette of India, remove any such monument from the operation of this exception.' The responsibility of the Central Government was therefore limited to protected monuments only, the rest devolving on the Provincial Governments; thus, in a way, the provisions of the Constitution (below, p. 46) were foreshadowed. In actual practice no Provincial Government is known to have taken any interest in the unprotected monuments or in excavation, the position relating to which was left undefined.

and two additional Assistant Superintendents.[1] The Government also laid down that forty per cent of the service will be Europeans, the rest being Indians.[2]

Two years later, in 1923, the Indian Retrenchment Committee recommended that the total provision for archaeology should not exceed ten lakhs of rupees, and the budget of the Survey was largely reduced.[3] But archaeology had in the meantime made phenomenal progress: the Indus civilization had been discovered, and the history of India had been thrown back by two thousand years. No government could but take cognizance of such outstanding discoveries, and members of the legislature wanted an assurance that lack of adequate finances would not stand in the way of extensive explorations. In 1925-26 the grant for exploration was increased to ninetytwo thousand rupees, to be raised to two lakhs and a half in each of the two subsequent years.[4] To cope with the extra work, an Exploration Branch, consisting of a Deputy Director General and three Assistant Superintendents (one of them subsequently designated as Special Officer) were sanctioned in 1926-27.

The necessity of increased fieldwork was realized on all hands. It was felt in some quarters that if research and excavation were to be conducted on a scale commensurate with the potentialities of the country, more was needed than Government action and Government funds, and it was accordingly proposed that something in the nature of an Indian archaeological institution fund, to receive grants-in-aid from the Government of India and, if possible, the Provincial Governments, and to be augmented by annual subscriptions, should be organized. It was also said that such a fund would give the Survey a secure annual income free from the accidents of vote in the legislature and would enable it to go ahead with its plans of an excavation-policy over a series of years, for 'whenever retrenchment is in the air, archaeological exploration is one of the first subjects that is bound to suffer.'[5] However, the matter was not pursued to any great extent.

As an additional fillip to excavations, it was simultaneously proposed that foreign institutions should be given sufficient facilities and inducement, in the form of a share of the excavation-proceeds, to send out archaeological missions to this country. This necessarily led to a consideration of the relevant sections of the Ancient Monuments Preservation Act, and incidentally other sections, so that they could be made more responsive to changed circumstances. Going ahead of our narrative for a while, it may be stated that ultimately it was mainly the section dealing with excavations that was

[1]The strength of the Survey, thus reconstituted, was as follows: Director General; Deputy Director General; Government Epigraphist; Superintendent for Epigraphy; three Assistant Superintendents for Epigraphy; Archaeological Chemist; Superintendent, Archaeological Section, Indian Museum; eight Circle Superintendents; two Assistant Superintendents (respectively for the Western and Central Circles); Assistant Superintendent for Central India and Rajputana; and two Assistant Superintendents as reserve. The office of the Epigraphist for Arabic and Persian inscriptions was, as before, to be held on a part-time basis, and the special post for Stein was to continue. The post of Deputy Director General was made permanent (Edn., A, A. and E., Jul. 1921, 1-3).

[2]Resolution dated 14th June 1921 (Edn., A, A. and E., Jun. 1921, 5-11). No subsequent orders on the reservation of quota for Europeans and Indians are available, and it seems to have died a natural death.

[3]Edn. and Health, Deposit, A. and E., May, 1923, 12-14.

[4]To have a comparative idea, it may be stated here that the exploration-grant for the year 1952-53 was Rs. 2,37,700, and these are days when money fetches far less than what it did in 1925.

[5]D.G.A., F. 877 of 1925-26.

amended in 1932, thus enabling the Government to frame rules for regulating excavations by outsiders under a licence from the Director General.[1]

Sir John Marshall relinquished the office of Director General, which he had held for over twentysix years, on the 6th September 1928 and was placed on special duty for writing a series of monographs on Mohenjo-daro, Harappā, Taxila, Sānchī, Māṇḍu, Delhi, Agra and Multān.[2] He was at the same time to hold charge of the excavations at Taxila and to co-ordinate the results of the operations of the Survey at the Indus and other allied sites. He retired on the 19th March 1931 but was re-employed on special duty. He finally left India on the 15th March 1934.

The above pages will have amply shown how much Indian archaeology owes to Sir John Marshall. In the sphere of exploration, the operations during the first two decades of the century were almost entirely confined to Buddhist sites, the notable exceptions being the excavations at Bhīṭā, Pāṭaliputra (with funds provided by a philanthrophist) and Taxila. The justification for this predilection for Buddhist remains was, according to Marshall himself, twofold: in the first place, thanks to the Chinese pilgrims and the researches of earlier archaeologists, more was known about this class of remains than any other class, and it was thought safer to start with these before groping in the dark; secondly, spectacular finds as were to be obtained at Buddhist sites were indispensable for securing financial support and public interest.[3] However, with the discovery of the protohistoric civilization in the north-west India Marshall rose to the occasion and rightly diverted an appreciable part of the resources of the Survey to the intensive excavations of the two key-sites and to an extensive survey of Sind and Baluchistan, which brought to light sites not only of the Harappā culture but of other earlier and later protohistoric cultures.[4] At the same time, later sites in the heart of India continued to receive their due share of attention. The constitution of the Exploration Branch was a fulfilment of the real need of the moment. It is not insignificant that the valuable work of the Branch

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[1] As enquiries are sometimes received about the rules governing the excavations in India, extract from the rules relating to excavations in protected areas, so far as they relate to the distribution of antiquities, are reproduced here: 'Antiquities found by a licensee in the area in respect of which the licence is held shall be disposed of by the Central Government after consultation with the Director General or, if in any case he thinks fit to appoint a Committee to advise on the subject, after consultation with such Committee. The disposal of such antiquities shall be subject to the following requirements: (a) human relics of historical and religious importance and any objects, which in the opinion of the Central Government are of national importance or are indispensable for the scientific completeness of the National Museum or for the purpose of illustrating the art of the country shall remain the property of Government and shall be retained in India; (b) subject to the provisions of clause (a), the licensee shall be permitted to retain such portion of such antiquities as will be sufficient in the opinion of the Central Government to recompense him for the expenditure incurred in the course of his operations under the licence; (c) antiquities retained by Government shall be distributed in accordance with the procedure for the time being applicable to the distribution of antiquities recovered by the Archaeological Department.'

[2] Of these, the following have been published: *Mohenjo-daro and the Indus Civilization*, 3 vols. (London, 1931); *Monuments of Sāñchī*, 2 vols. (Delhi, 1940); and *Taxila*, 3 vols. (Cambridge, 1951). The monograph on Harappā is by M. S. Vats, *Excavations at Harappā*, 2 vols. (Delhi, 1940).

[3] Marshall in Cumming, *op. cit.*, p. 24.

[4] H. Hargreaves, *Excavations in Baluchistan, 1925*, Mem. Arch. Surv. Ind., no. 35 (1929); A. Stein, *An Archaeological Tour in Waziristan and Northern Baluchistan*, Mem. Arch. Surv. Ind., no. 37 (1929); *An Archaeological Tour in Upper Swat and adjacent Hill Tracts*, Mem. Arch. Surv. Ind., no. 42 (1930); *An Archaeological Tour in Gedrosia*, Mem. Arch. Surv. Ind., no. 43 (1931); N. G. Majumdar, *Explorations in Sind*, no. 48 (1934).

came to a cessation only four years after Marshall had relinquished the stewardship of the Survey.

Of late much has been said about the inadequacy of the excavation-technique of Marshall and his associates. To say that the Indian standard was not behind what contemporarily obtained in the Near East is no doubt an answer to the charge, but European archaeology had by then fully recognized the principle and importance of stratified excavation and put it into extensive practice. The fact is that workers in India had not thought it necessary to maintain contacts with their foreign counterparts.

Apart from the tactics, the strategy is alike open to criticism, for no attempt was made to tackle different classes of sites spread all over the country so as to obtain regional culture-indices; Stone Age investigation remained virtually unknown.

But it is easy to indulge in finding fault with methods, which might have answered the needs of India at that time, for what was then required was more the awakening of interest in her past among the public than the satisfaction of the professional's demand for specialized knowledge. Nothing short of vast excavated remains, such as one finds at Mohenjo-daro, Taxila, Sārnāth and Nālandā, with equally vast yields of excavated objects, would make the people realize what excavations could bring to light, and the same remains true to a large extent even today.

The achievements of Marshall in the direction of rescuing monuments from decay and saving them for posterity remain unchallenged. His Note prepared only one year after his arrival in India (above, p. 31) shows the great insight he acquired within a remarkably short time into the problems of preservation under Indian conditions. His repeated insistence on the artistic aspect of conservation, without impairing the original features of a building, his differentiation between the requirements of early and medieval monuments, as elaborated in his Note of 1915 (above, p. 35), the care with which he revived and tended the gardens around monuments, the effective precepts on repairs embodied in his *Conservation Manual*—all show his aesthetic yet practical approach to the problems of conservation. His power of organization and capacity for holding high the prestige of his Survey under all circumstances enabled it to emerge safely out of many a critical situation.

5. 1928–1937

Marshall was succeeded as Director General by Mr. H. Hargreaves on the 8th October 1928. The policy and affairs of the Survey continued as before, and fruitful explorations were conducted in Sind. On the administrative side, he proposed, in 1930, the abolition of the office of the Superintendent for Hindu and Buddhist Monuments at Lahore, its substitution by an Assistant Superintendent attached to the Frontier Circle and the redesignation of the Superintendent for Muhammadan and British Monuments, Agra, as Superintendent, Northern Circle. These proposals, accepted by the Government shortly after his retirement in 1931, had the merit of bringing these two Circles into line with the other Circles in that the distribution of duties became geographical irrespective of the denominational affiliations of the monuments.

Rai Bahadur Daya Ram Sahni assumed charge of Director Generalship on the 29th July 1931. By then a world-wide economic depression had overtaken India, resulting in an all-round retrenchment in expenditure, the axe of which fell heavily on the Archaeological Survey. The number of superior officers was drastically curtailed from twentynine

to twenty,[1] the Exploration Branch was done away with, a large number of subordinate posts, including scholarships, were cut down and funds of normal work were curtailed; in fact, the budget of the Survey was reduced to a mere subsistence-allowance. The hard blows had naturally a crippling effect on the activities of the Department; the *Annual Reports* were allowed to fall into arrears, till an officer had to be appointed in 1935 to clear up the accumulated arrears.

On the 1st June 1935 the Director Generalship passed to Mr. J. F. Blakiston. At that time constitutional reforms were once more in the air. The Government of India Act of 1935 included 'ancient and historical monuments; archaeological sites and remains' in the Federal list, this time without any corresponding entry in the Provincial list. Following this, in 1937, the Central Government assumed all powers vested in the Provincial Governments under the Ancient Monuments Preservation Act, thus relieving the latter of the only surviving function they still held in the administration of archaeology. Sind, now a separate Province, was detached from the Western Circle and added to the Frontier Circle, and with the separation of Burma from India, the archaeological organization of that country became independent.

An event, not directly concerned with the history of the Survey, may be mentioned here. In 1935 Markham and Hargreaves surveyed the museums and art-galleries of India on behalf of the Museums Association of the United Kingdom with financial assistance provided by the Carnegie Corporation of New York. Their report,[2] besides containing a complete directory of museums in India, the last of its kind,[3] brought into prominence the backwardness of the museum-movement in India, ascribed to the lack of trained curatorship, centralized direction, adequate finances and other factors. To the Government of India the report recommended the provison of greater financial assistance for the better museums; the appointment of an Inspector General of Museums with European experience for a period of at least three years; the training of a qualified Indian officer to succeed the Inspector General; the grant of scholarships for the training of curators and giving opportunities and facilities for training; the provision of a new constitution for the Indian Museum, indisputably the largest museum of India, to allow of the appointment of a full-time permanent Director in charge of the whole Museum, with permanent full-time keepers for each section; and the revival of the standing committee on museums, as recommended by the Museums Conference of 1912, a product of the Conference of Orientalists of 1911 (above, p. 35). The findings of Markham and Hargreaves went unheeded, no doubt largely on account of the fact that, except the few museums for which

[1] Director General; Deputy Director General; Government Epigraphist; Superintendent for Epigraphy; Assistant Superintendent for Epigraphy; Archaeological Chemist; seven Circle Superintendents; four Assistant Superintendents; Curator, Central Asian Antiquities Museum; Assistant Engineer; and reservist. Marshall's special appointment and the part-time appointment of the Epigraphist for Arabic and Persian inscriptions were to continue. The Superintendentships of the Eastern Circle and Indian Museum were combined but were re-separated in 1939. The following posts were retrenched: Deputy Director General for Exploration; five Assistant Superintendents (including one for Epigraphy, one for Exploration, Special Officer for Exploration, one general and one reservist); one Assistant Archaeological Chemist; one Assistant Engineer; and Superintendent, Archaeological Section, Indian Museum.

[2] S. F. Markham and H. Hargreaves, *Museums of India* (London, 1936).

[3] Of late, at the instance of UNESCO, the Government of India have undertaken to prepare an up to date directory of museums, and the work has been entrusted to an officer of the Department. The first directory of museums seems to have been prepared also by an officer of the Department in 1911 in connexion with the Conference of Orientalists (above, p. 35).

the Government of India were responsible, the chief museums were the charges of the Provincial Governments and that the Government of India had no, and even now do not have any, binding authority in matters concerning them. Today the officers in charge of all principal museums are alive to their responsibilities, but, as the report emphasized, 'finance is indeed the key of India's museum development; it is hopeless to expect a great movement on fantastically low budgets'.

Reference has been made above (pp. 37-38) to the amendment of the Ancient Monuments Preservation Act, so as to induce outsiders to undertake excavation in India. Taking advantage of the new concessions, the American School of Indic and Iranian Studies and the Boston Museum of Fine Art jointly sent out an expedition to India in 1935 to excavate Chanhu-daro in Sind.[1]

6. 1937-1953[2]

On the 21st March 1937 Rao Bahadur K. N. Dikshit assumed charge of the Director Generalship. The financial position was gradually improving, and the Survey was in a position once more to plan its activities, though on a restricted scale. One of the first things to receive Dikshit's attention was an exploration of those parts of Sind which had been left uncovered by the previous survey (above, p. 38), but the exploration-party, which started work in November 1938 in the western hill-tracts of Sind, met with a tragic end at the hands of dacoits, resulting in the death of its leader and injuries to its other members.

In the same year, the Government decided to invite a foreign expert to report on matters relating to future excavations. The choice fell on Sir Leonard Woolley, the terms of reference being to advise on: (1) the most promising sites or areas for excavation; (2) the best methods and agencies for achieving the speedy and fruitful development of exploration-activities in general, consideration in this regard being had not only to Government but to non-official agencies such as universities, learned societies, etc.; (3) the best method of training or selecting officers for exploration-work; and (4) any general points bearing on the field of exploration and excavation.

Sir Leonard stayed in India from the 6th November 1938 to the 11th February 1939, during which he visited fortyfive places, and shortly afterwards submitted his report, which was virtually a wholesale condemnation of the activities of the Department except in the direction of conservation of standing monuments, for which he was all praise, and epigraphy, about which he had nothing to say. He regarded the conservation of excavated remains and the maintenance of site-museums as wasteful and futile for the scholar and layman alike. His remarks about the quality of excavations and the selection of sites were also thoroughly critical. 'The policy', he observed, 'of dispersing the funds available for excavation into small grants for work on a multiplicity of sites, the idea of which seems to be that it should give the illusion of great activity on the part of the Department, was fatal to what should have been the main object of excavation, i.e. the establishment of a typological sequence of antiquities.' Further, 'on almost every site I visited there was evidence of the work having been done in an amateur fashion by men anxious to do well

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[1] E. J. H. Mackay, *Chanhu-daro Excavations 1935-36* (New Haven, 1943).

[2] Our review should have ended with 1952, on the 21st February of which year the Archaeological Survey of India completed fifty years of its continued existence, but the events of the following year are being included here for the sake of completeness.

but not sufficiently trained and experienced to know what good work is.' The tendency of not attempting to dig down to the lower levels by removing structures of the upper ones was deprecated. Among his recommendations were the appointments of an Adviser on Archaeology, 'who could deal with all the points at issue' and two prehistorians (called protohistorians by him) specializing in the antiquities of the Stone Age. He also felt that greater incentive should be held out to encourage foreign and Indian institutions to take part in excavation.

Some parts of Woolley's report were definitely based on hurried observation and an imperfect appreciation of Indian requirements, and the remarks about the quality of excavations may be regarded as of too sweeping a nature. Perhaps it would have been more helpful to the cause of Indian archaeology had a foreign expert been invited to excavate an Indian site and thereby train the officers of the Survey than to make a rapid tour over sites excavated and unexcavated. Be that as it may, the recommendations of Woolley were not immediately followed up by the Government except in one direction.

One of the items that Woolley was to report on was 'the most promising sites or areas for exploration'. He laid down that the criteria for the selection of a site should be: (1) the site should have been inhabited over a long period, so that stratified conditions are probable, affording evidence for a chronological sequence; (2) some at least of such strata should belong to known historic periods to which coins or inscriptions are likely to assign them with reasonable certainty; (3) the site should have been in the past of such importance that not only are coins and inscriptions likely to be found but the other objects should be of a quality really representative of the art of their periods; and (4) the site should be one lending itself to excavation. Of the sites in north India he recommended Rāmnagar (Ahichchhatrā) in District Bareli, U.P., and suggested that 'the excavation should be on a large scale and should employ all those officers of the Department whose training in field work is desirable, the direction being in the hands of a really competent archaeologist'.

Accordingly, a large-scale excavation was undertaken at Ahichchhatrā during the years 1940-44 under the direction of Dikshit. Particular attention was paid to the classification of historical pottery-types, ranging over about fifteen centuries, which had been practically ignored before.[1]

Dikshit organized the first Indian prehistoric party, to explore the Sābarmatī valley of Gujarat. He also revived the lost personal contacts with Provincial museums and Departments of Archaeology of the Indian States. Encouraged by him, the University of Calcutta took a licence for excavating the ancient site of Bāngarh, District Dinājpur, Bengal, and thus marked itself out as the first Indian university to take interest in excavation.

The effects of the War made itself felt on the activities of the Survey during the last years of Dikshit's Director Generalship. The Government decided that no additions

[1] *Ancient India*, no. 1 (1946), pp. 37-59, which, however, gives only a few representative types out of a vast range. Prior to that the only published pottery-material of the historical period, extremely limited in scope, was from Maholi near Mathurā, *Jour. U.P. Hist. Soc.*, XV (1940), pp. 135-139. The pottery from Sar Dherī, District Peshawar, excavated by S. Corbiau and S. Mukerji in 1938-39, was carefully analysed but not published. It has been said that the observation of the stratification at Ahichchhatrā was of a rough- and-ready type, but it may be noted that nothing obtained from the later stratified excavations at sites of comparable dates has contradicted the pottery-sequence evolved at Ahichchhatrā or the dates ascribed to different pottery-types; on the other hand, they have fully confirmed the conclusions derived there.

would be made to the list of protected monuments for the duration of the War. Much more distressing was the decision to stop the printing of all archaeological publications, including the epigraphical ones.

In 1944 Dr. R. E. Mortimer Wheeler[1] was recalled from war-service to succeed Rao Bahadur Dikshit as Director General on a contract of four years. The period of his stay in India was marked by numerous changes and all-round improvements.[2] Within a few months of his arrival he constituted an Excavations Branch within the Survey under an Assistant Superintendent (shortly afterwards raised to the status of a Superintendent), for he felt that 'the excavation of a site, like the ordering of a battle, must be thought out and co-ordinated by a single present and directing mind. Otherwise chaos, waste, inefficiency are inevitable'.

By February 1945 the Survey was re-organized in several directions. Conservation-work in all Circles, except the Northern and Frontier,[3] had so long been executed by the Provincial Public Works Departments, acting as agents of the Survey. To have a greater hold over the monuments and to ensure a proper standard of repairs, conservation was now Centralized throughout India. This involved the provision in all the Circles of a uniform strength of personnel, including a Superintendent, an Assistant Superintendent[4] and the necessary staff for conservation. An Executive Engineer[5] (in lieu of the Assistant Engineer of the Northern Circle) was also appointed at headquarters to cope with the increased work consequent upon the assumption of direct responsibility for the repairs and upkeep of monuments.

The re-organization-scheme also included the much-needed post of a prehistorian (of the status of an Assistant Superintendent), for 'the technical requirements of pre-history, relying, exclusively as it must upon material and environmental evidence, differ in degree and emphasis from those of more recent archaeology and call therefore for the services of investigators trained upon somewhat special lines'. Wheeler did not evidently agree with Woolley's view that most of the Departmental museums should be closed down, for his scheme provided for the establishment of a Museums Branch in the Survey by up-grading the post of the Curator, Central Asian Antiquities Museum, to that of an Assistant Superintendent. The other additional posts brought about by the scheme were an Assistant Archaeological Chemist and an Assistant Superintendent for Muslim Epigraphy, whose functions had till now been entrusted to a part-time officer.

All this involved much increase in the work at headquarters, and the necessity of having an officer of high standing was keenly felt. The post of Joint Director General of Archaeology was therefore created towards the close of 1945 to meet the situation. Further, in order to place the publication-programme that Wheeler had in mind[6] on a sound footing and 'to maintain the standard of Departmental publication at a suitably high

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[1] Knighted in 1952.

[2] Summarized by Wheeler himself in a circular 'Director General's report on the development of the Department', 31st December 1947.

[3] The execution of repairs to monuments had been taken over as a full Departmental responsibility in the United Provinces in 1925 and in Panjab in 1927.

[4] The Delhi monuments were to continue under an Assistant Superintendent. These monuments had been removed from the jurisdiction of the Northern Circle in 1938 and placed under the Assistant Superintendent for Central India and Rajputana. In 1945 the designation of the post was changed to Assistant Superintendent, Delhi Circle.

[5] Redesignated 'Archaeological Engineer' in 1950.

[6] The innovations in the Departmental publications introduced by Wheeler are stated below (p. 49).

level', a Superintendent for Publications was appointed in 1946.[1] Next year the Museums Branch was strengthened by the addition of an Assistant Archaeological Chemist.

To remove the unwieldiness of a few Circles, a new one, called the South-eastern Circle, to consist of the Andhra districts of Madras, the whole of Orissa and a few adjacent districts of the Central Provinces, was constituted in 1947.

Like the monuments themselves, Wheeler planned to maintain directly the gardens attached to the monuments at Delhi and Agra. Though the actual transfer of charge of the Delhi gardens took place only in 1950, and those at Agra have not yet changed hands, a Garden Superintendent and an Assistant Garden Superintendent were sanctioned in 1947.

'For the purpose of reviewing and advising the Central Government on the needs of archaeology in India, current and future' and 'to act as an intermediary between the archaeological services, the world of learning, the administration and, in some small degree, the wider public', the Government established, in 1945, a Central Advisory Board of Archaeology, consisting of representatives of the universities, learned societies, the Government and the Indian States. The Board has till now (1953) met nine times and has, by its constructive cricticism and advice, helped the Department in many directions.

The question of the formation of a National Museum of India had been sporadically receiving the attention of the Government for a long time. The first effective step towards the establishment of such a museum was taken in 1945, when, on the initiative of Wheeler, a committee, with Sir Maurice Gwyer as the chairman, was set up to report on the functions, administration, organization, etc., of the Museum. The committee reported in 1946, and from then to 1949, when the Museum was inaugurated, Wheeler and his successor vigorously pursued the matter, so that it was not shelved once again.

In 1947 the far-reaching political changes that India underwent had their effects on her archaeology. The archaeological results of the Partition may be summed up in Wheeler's words: 'If we now impose the new boundaries upon the archaeological map, the picture is an interesting one. Pakistan is found to include almost the whole of the known extent of the earliest civilization of India, that of the Indus Valley. It includes also Gandhāra and the homeland, therefore, of a phase of art which spread its influence as far south as remote Amarāvatī; and, with Gandhāra, Chārsada, once Gandhāra's metropolis and now one of the unexplored key-sites of Asia; likewise Taxila, Gandhāra's provincial capital, ancient meeting-place of east and west; and a host of Buddhist stūpas and monasteries, of which Takht-i-Bāhī and the neighbouring Sahri-Bahlol are merely notable examples. Pakistan has no reason to complain of its archaeology: except in one anomalous respect. Almost all the Mohammadan monuments of the first importance remain in India. The battered Moghul fort and the remains of Jahāngīr's tomb at Lahore, even the two beautiful tiled Persian mosques at Tatta in Sind, are a poor sample of the achievement which also produced the forts and mosques and tombs of Delhi and Agra, Akbar's royal city of Fatehpur Sikrī, the tombs of Sāsāram, the mosques and tombs of Ahmedabad, Jaunpur, Bijāpur, Pāṇḍua—the list need not be extended. All these, which are still a part of India, will by India be worthily cherished as an integral portion of her cultural heritage.'[2]

On the administrative side, the Frontier Circle of the Survey became detached from India. The eastern part of Panjab which remained on this side of the border was combined

[1] In 1949 the post was upgraded to that of a Deputy Director General for Exploration, so that in addition to looking after publications the incumbent could help the Director General in the proper supervision and conducting of exploration and excavation.

[2] *Ancient India*, no. 4 (1947-48), p. 1.

with Delhi and eventually formed into a full-fledged Circle under a Superintendent.[1] With the incorporation of the larger part of Bengal into Pakistan the attenuated Eastern Circle was strengthened by the incorporation of Orissa, then a part of the South-eastern Circle. Following the new governmental set-up, the Archaeological Survey of India was renamed the Department of Archaeology, to give it a proper place in the reconstitution of the Ministries and other offices of the Government of India, much though one may regret the loss of a name that had stood for over eighty years.

From the very beginning Wheeler attached great importance to training. He organized conservation-courses for the Departmental staff and such outsiders as were charged with the care of monuments. Students from universities and other institutions thronged the excavation-camps to receive practical instruction in fieldwork—a custom which has since been followed up. To think that the students thus trained for a couple of months or so would become experts in the technique of excavation is palpably expecting too much; yet the training does give them the capacity to appreciate the discipline of archaeology and provides the necessary corrective to the notions of history that they may have developed from their text-books. Wheeler was also anxious to see that within the Survey itself there was no lack of personnel to create a break in the chain of succession to higher appointments. As a reserve he proposed the appointment of four probationers in the cadre of Assistant Superintendents, of which, however, only one was sanctioned and appointed after his leaving India.[2] His scheme for training also envisaged the regular sending abroad of the officers of the Survey to establish contacts and to acquaint themselves with the latest developments in different fields of archaeology.

I have deferred so long the mention of the excavations carried out under Wheeler's direction by the new Excavations Branch. He introduced into India the observation of stratification in excavation and thus brought the Indian excavation into line with the best international standard. The factors deciding the choice of the sites excavated by him have been explained by him in a previous number of this Bulletin[3] and need not be recounted here. It would suffice to say that each excavation achieved the specific purpose for which it had been undertaken. He aimed at establishing some firm datum-lines in Indian archaeology to which all results accruing out of future excavations could be correlated. It may be said, however, that his programme did not include direct attacks on the archaeological problems of north, central and west India, and such attacks have produced immense results in the last few years.

Dr. Wheeler made over charge of his office on the 30th April 1948 to Dr. N. P. Chakravarti. The period of the latter's Director Generalship was marked by the organization, in 1948, of a large-scale exhibition in New Delhi of Indian art-objects which had been taken to London in 1947 in connexion with an exhibition sponsored by the Royal Academy. The New Delhi exhibition, important in itself, also formed the nucleus of the National Museum, which was declared open on the 15th August 1949.

Another event of the period worth recalling was the visit of Professor F. E. Zeuner, the distinguished geochronologist, to India in December 1948. He spent a few months in this country and visited practically all the Stone Age sites, accompanied by a few officers of the Department and others who were likely to profit by training and observation with him.

[1] The formation of the Circle as a complete unit took place as late as 1949.

[2] In 1952 this post was converted into a regular one under the designation of Assistant Superintendent Headquarters.

[3] 'Archaeological fieldwork in India: planning ahead', *Ancient India*, no. 5 (1949), pp. 4-11.

In 1949 the State of Baroda merged into the Indian Union; its archaeology was taken over by the Government of India and the staff, including a Director and an Assistant to the Director, transferred to the Department of Archaeology.

On the 26th January 1950 the Constitution of Free India came into being. It ordained the following allocation of functions relating to archaeology between the Union and the State Governments:

1. Union: ancient and historical monuments . . . and archaeological sites and remains, declared by Parliament by law to be of national importance; and
2. State: ancient and historical monuments . . . other than those declared by Parliament to be of national importance.
3. Besides these two categories, both the Union and the States would have concurrent jurisdiction over archaeological sites and remains other than those declared by Parliament by law to be of national importance.

The principles behind this allocation of jurisdiction are clear: 'the Central Department of Archaeology will be relieved of the care it had been bestowing, since its inception, on numerous monuments of local significance and will now be free to restrict its activities only to outstanding monuments of national importance. Sooner or later, the States will have to start their own organizations for looking after monuments other than those accepted by Parliament as "national". But this holds good in the case of monuments only; the position in regard to "archaeological sites and remains" is somewhat different. Here, while the Centre will remain in exclusive charge of such sites and remains as are considered by Parliament to be of national importance, the residue will not completely devolve on the States but will remain under the concurrent jurisdiction of the Union and of the respective State. The implications are significant, for it means that the Centre will not be absolved of all responsibility in this direction and can assert itself whenever it feels that a State, either through negligence or by following wrong methods or policies of exploration, is acting detrimentally to the sites and remains in its jurisdiction.'[1] Further, while monuments and sites could previously be protected by an executive notification, it has now become the prerogative of Parliament to declare them by legislation to be of national importance.

On the recommendation of the Federal Finances Integration Committee, the Government decided that the monuments of national importance in what are now called the Part B States, constituted by the former Indian States, either individual or integrated, should be for the time being maintained by the concerned States, the expenditure being re-imbursed to them by the Centre. The responsibility of monuments in the Centrally-administered Part C States was forthwith assumed by the Department of Archaeology.

Dr. Chakravarti relinquished his office on the 30th June 1950 but continued in the Department for a couple of years more as Adviser on Archaeology, to be generally responsible for work connected with the Archaeological Departments in Parts B and C States and also for that of the National Museum. His successor as Director General, Shri Madhosarup Vats, prepared exhaustive notes on the conservation of the monuments of national importance in these States, a large number of which had suffered from age-long neglect, so that they could be saved from decay and brought back into a sound state of preservation.

In fulfilment of the provisions of the Constitution, Parliament passed, in 1951, the 'Ancient and Historical Monuments and Archaeological Sites and Remains (Declaration of National Importance) Act', by which all the monuments previously protected under

[1] *Ancient India*, no. 5 (1949), p. 1.

the Ancient Monuments Preservation Act in Part A States, corresponding to the former Provinces of British India, were redeclared as of national importance and about four hundred and fifty monuments and sites in Part B States were included in the national list.

The system under which the Part B States maintained the national monuments as agents of the Department of Archaeology could not continue for long and had to be soon terminated. This necessitated the strengthening of the organization of the Department by the addition of two more Circles in addition to the seven existing ones. The Government also decided that such archaeological staff of the Part B States as were to be rendered superfluous to the requirements of the States as a result of a large number of their monuments changing hands should be absorbed in the Department and equated to different categories of its existing staff. The work was not without hurdles, but the arrangements were eventually finalized and kept ready for execution.

Vats retired on the 2nd March 1953, to be succeeded by the present incumbent of the office, on whom it fell to translate into reality the schemes prepared by his predecessors. During the months of June and July this year the two new Circles came into being,[1] and the additional staff were assimilated into the Department.[2] In spite of the obvious difficulties in the way, the task was successfully accomplished, thanks to the diligence of his colleagues, who rose to the occasion, and the friendliness of the officials of the affected States, who fully co-operated in the transfer of the monuments. The archaeological integration of India is now complete, and the Department of Archaeology has now spread its organization all over the country.[3]

7. PUBLICATIONS

During the fifty years of its existence the Archaeological Survey has enriched the archaeological literature of the world by many monographs and periodical publications. Mention has been made above (p. 32) of the *Annual Reports*, published in two parts, from 1902 onwards. The planning of the Report underwent change from time to time. Thus, when the Conference of Orientalists of 1911 (p. 35) suggested that detached memoirs should take the place of the second parts of the Report, public opinion was invited, and on a consideration thereof it was decided that while the second parts should continue, the scope of the first parts should be elaborated by a detailed and illustrated summary of the

[1]For the present-day orientation of the Circles, see fig. 1.

[2]The superior staff of the Department now consist of: *Headquarters:* Director General, Joint Director General, Deputy Director General for Administration, Deputy Director General for Exploration, Archaeologial Engineer and Assistant Superintendent; *Epigraphical Branch:* Government Epigraphist, Superintendent, Assistant Superintendent and Assistant Superintendent for Arabic and Persian Inscriptions; *Chemical Branch:* Archaeological Chemist and Assistant Archaeological Chemist; *Indian Museum:* Superintendent, Archaeological Section; *Museums Branch:* Assistant Superintendent and Assistant Archaeological Chemist; *Excavations Branch:* Superintendent; *Prehistory:* Assistant Superintendent; *Circles:* nine Superintendents and nine Assistant Superintendents; *Gardens:* Superintendent and Assistant Superintendent; *Monuments:* Custodian at Sānchī and four Special Officers in the South-western Circle.

[3]The history of the Archaeological Survey from 1902 has also been dealt with by Marshall in Cumming, *op. cit.*, pp. 13-33, which is precious on account of the personal reminiscences that it contains, and by N. P. Chakravarti in *Archaeology in India* (Delhi, 1950). The *Annual Reports* contain valuable material which can be utilized in writing a comprehensive history of the Survey. Much information given above is based on records in the National Archives of India, to which my thanks are due for making them available to me.

activities of the Survey and should incorporate the epigraphical résumés, till now published in the second parts. Only four years later, the proposal for detached memoirs received favour, and, in 1916, the second parts of the Report were discontinued. With the cessation of the Provincial Surveys in 1921 (p. 36) the *Annual Reports of the Archaeological Survey of India* had necessarily to include the material previously published in their reports (p. 31, n. 5), with the result the former gained in bulk and importance once more. In this form the Reports continued to be published till the year 1936-37. In 1938 Rao Bahadur Dikshit decided that as they contained much matter in which the public were not directly interested, the future ones should be split up into two parts, one, in a more convenient *format*, dealing with exploration, epigraphy and other researches and the other with conservation and routine-matters. However, due to the outbreak of the War, when all archaeological publications were suspended, the scheme did not materialize.

The idea of detached memoirs mentioned above took shape in a new series called the *Memoirs of the Archaeological Survey of India*, of which the first number appeared in 1919 and seventyone have been printed till now. They cover a large range of subjects, including exploration-reports, monuments, architecture, inscriptions, etc.

The *New Imperial Series*, inaugurated by James Burgess as early as 1874, continued till 1933, when its last volume, LIII, was published.[1] Though most of its volumes are now out of print, there is still a demand for them, testifying to their usefulness to Indian archaeology.

None of the above series, however, was comparable in scope with the archaeological journals of the west. Dr. Wheeler, therefore, decided to bring out a periodical called *Ancient India, Bulletin of the Archaeological Survey of India*, to contain general and research-articles on different aspects of the archaeology of India and the adjacent countries and to be produced in a handy *format*. The first number of *Ancient India* was published in 1946; it has amply fulfilled its purpose and has gained a wide circulation in India and abroad.

But the old *Annual Reports* had their own value in that they kept the public informed about the current work of the Department, and their discontinuation left a void which *Ancient India* could not fill. It has, therefore, been decided that there should be another annual publication, *Indian Archaeology—a Review*, which, while not pretending to be as exhaustive as the *Annual Reports*, will give in an essential form the chief activities in the country each year.

The history of the epigraphical publications is no less varied. The most important of them is the periodical *Epigraphia Indica*, which made its first appearance in 1892,[2] and twentyseven volumes of which, each complete in eight parts, have so far been published. Its counterpart, *Epigraphia Indo-Moslemica* (to be renamed *Epigraphia Indica—Arabic and Persian Supplement*), which performs the same function in regard to Arabic and Persian inscriptions as *Epigraphia Indica* does in the field of Sanskritic and Dravidian inscriptions, was first published in 1909-10, and eighteen issues have appeared up to date.

The progress in the publication of volumes in the *Corpus Inscriptionum Indicarum* series, which contain inscriptions classified according to dynasties and are invaluable for historical research, has been regrettably slow, for only three volumes (two during the period with which we are concerned) have till now appeared.

[1] The cessation of the series does not seem to have been the result of a deliberate policy. With the inauguration of the Memoirs there was an overlap of subjects between the two series. For example, while H. Cousen's *Chāḷukyan Architecture* appeared in N.I.S., XLIII (1926), A. H. Longhurst's *Pallava Architecture* appeared in three parts as Memoirs no. 17, 33 and 40 (1924-30).

[2] See above, p. 30, n. 7.

For the epigraphic records of south India, a separate series known as *South Indian Inscriptions* has been running since 1890.[1] The progress in this series has been more satisfactory than the preceding one, for as many as thirteen volumes have since appeared. The grouping of the inscriptions has, however, varied from time to time, being according to localities, dynasties or even the language of the inscriptions; it is time that a uniform system was planned for the succeeding volumes.

South Indian inscriptions were also dealt with from 1905 to 1946 in another series, at first called the *Annual Report of the Assistant Superintendent for Epigraphy, Southern Circle*, later on *Annual Report of the Assistant Archaeological Superintendent (Epigraphy)* and finally *Annual Report on South Indian Epigraphy*. This series contained brief notices of inscriptions of south India collected during a particular year. In 1945 it was felt that it was illogical to restrict the scope of the reports to south India only, and it was decided to supersede it by the *Annual Reports on Indian Epigraphy*, so that the whole of India could come within their purview.

Apart from these, the Survey has off and on published guide-books to monuments and museums in its charge. While the previous books, though admirably suitable for students, were somewhat lengthy and at places technical, the present policy is to have shorter and simpler books to meet the requirements of the ordinary visitor. The Department, in its earlier days, also published catalogues of a few museums.[2]

The reports on a few major excavations have been published as monographs not conforming to any definite series. Mohenjo-daro and Taxila are each dealt with in three volumes[3] published abroad under arrangements with the Government of India, while Harappā[4] and the further excavations at Mohenjo-daro[5] are each covered in two volumes and are published in India.

8. ARCHAEOLOGY IN THE STATES

The Archaeological Departments in the States, which had been usefully supplementing the work of the Central Archaeological Survey, may now be referred to in brief. The first State to start its own Department seems to have been Mysore, which, since 1900, has been maintaining its own organization. Mysore was followed shortly afterwards by Kashmir and Mayūrbhanj and later on by Hyderabad, Gwalior, Travancore, Cochin, Bhopal, Baroda and Jaipur. Some of these Departments rendered valuable service to the monuments in their charge and even undertook excavations. Particularly worth mentioning among their activities were the preservation of Ajaṇṭā, Ellora and other monuments by Hyderabad; the maintenance of the monuments at Sāñchī by Bhopal; the reconstruction of an early temple with old tumbled-down material at Khiching by Mayūrbhanj; the excavation at Maski and other places by Hyderabad and at Brahmagiri and Chandravalli by Mysore, all of which drew attention to the protohistoric potentialities of the Deccan, at Pawāyā by Gwalior, at Amreli by Baroda and at Bairāṭ, Sāmbhar and

[1] The first seven volumes were published in N.I.S. see above, p. 30, n. 8.

[2] J. Ph. Vogel, *Cat. Delhi Museum of Archaeology* (Calcutta, 1908); *Cat. Bhuri Singh Museum, Chamba* (Calcutta, 1909); *Cat. Arch. Museum, Mathura* (Allahabad, 1910); D. R. Sahni, *Cat. Arch. Museum, Sārnāth* (Calcutta, 1914); M. Hamid and others, *Catalogue of the Museum of Archaeology at Sanchi* (Calcutta, 1922); F. H. Andrews, *Central Asian Antiquities Museum, New Delhi: Descriptive Cat.* (Delhi, 1935).

[3] Above, p. 38, n. 2.

[4] *Ibid.*

[5] E. J. H. Mackay, *Further Excavations at Mohenjo-daro*, 2 vols. (Delhi, 1938).

Rairh by Jaipur; and the epigraphical surveys by Hyderabad and Mysore. The leading Departments published their annual reports and other works, some of them of great merit. Particular mention may be made of the sumptuous publications on Ajaṇṭā and Bīdar by Hyderabad.[1]

Some States, without regular Departments, were helped technically or financially, sometimes bothways, by the Archaeological Survey of India: for example, the excavation and conservation at Sānchī were directed by Marshall himself; the overhauling of the monuments at Māṇḍu by Dhār was made possible by a liberal grants-in-aid from the Survey; and Chhatarpur owed not a little to it for the preservation of the Khajurāho temples. To advise the lesser States in Rājpūtāna and Central India, too small to have their own archaeological service, the Survey had on its staff a special Assistant Superintendent till 1945.

The Departments in Hyderabad, Mysore and Kashmir are still functioning, those of Gwalior and Jaipur have provided the nucleus for the Departments in Madhya Bharat and Rajasthan and those of Bhopal and Baroda have merged into the Central Department. The existing Departments, except that of Kashmir which stands on a different footing in the Constitution, have no doubt recently suffered in importance due to the outstanding monuments in their charge having come over to the Centre, but we still look up to them for the efficient upkeep of monuments of local importance, for epigraphical research and for exploration and excavation under trained direction.

To take charge of monuments of local importance is now a constitutional responsibility of all the States. At the present moment, barring the few States mentioned just now, no other State has actively taken in hand the setting up of its own archaeological system.

9. MISSIONS ABROAD

While individual officers of the Department have gone abroad on study-tours or allied purposes and have, in recent years, also attended international conferences on monuments and museums, archaeological missions from India to neighbouring countries have been very few indeed, which is surprising when one considers the length of the existence of her Archaeological Survey, her geographical position and the fact that such countries abound in relics of direct interest to her. Of the limited number of missions, the foremost are those of Sir Aurel Stein, who led three successive archaeological-*cum*-geographical expeditions in Central Asia and covered roughly the area comprising the Oxus region on the west, China proper on the east, the big ramparts of Tien-Shan, 'the celestial mountains', on the north and the snowy Kin-Lun ranges on the south. This is not the place to recount the achievements of his expeditions, undertaken respectively in 1900-01, 1906-08 and 1913-16, the first of them outside the auspices of the Survey. It will suffice to say that he did full justice to that land of many cultures and recovered innumerable paintings of different traditions, hundreds of manuscripts in diverse scripts (including Brāhmī and Kharoshṭhī) and languages (including Sanskrit, Prakrit, Tibetan, Chinese and other less-known ones), a vast mass of domestic objects and myriads of antiquities of terracotta, stucco and other material. The art-objects brought to light unknown phases of culture-contacts and evolutions of Chinese, Persian and Indian plastic

[1] G. Yazdani, *Ajaṇṭā*, text and plates in 3 pts. each (Oxford, 1930-46); ***Bidar, its History and Monuments*** (Oxford, 1947).

arts and paintings. The fascinating results of his expeditions are described in thirteen large volumes.[1]

'Western Tibet', consisting of Lahoul, Ladakh, Zanskar, Puring and some adjacent districts, partly in Kashmir and partly in Kāngṛā District of Panjab, is no doubt politically a part of India but has cultural affinities with Tibet. For that reason mention may be made of an archaeological exploration undertaken in those regions by Reverend A. H. Francke of the Moravian Mission at Kyelang, a scholar of Tibetan, whose services were secured in 1909 by the Government for the purpose. In his tours Francke came across a large number of Buddhist shrines, monasteries with wood-carvings and other antiquities and Tibetan manuscripts.[2]

In 1945 Dr. Wheeler went to Iran for a month and visited a large number of medieval monuments and ancient sites, including Persepolis and Sialk. He returned *via* Iraq, where he saw the sites of Babylon, Birs Nimrud, Ctesiphon and Samarra. Next year he visited Afghanistan, seeing a large number of sites, the more well-known of which were Bamiyan, Kunduz, Balkh, Ghazni and Kandahar.

In response to an invitation of the Government of Indonesia, the Government of India sent to that country two officers of the Department, Shri K. R. Srinivasan and Shri C. Sivaramamurti, in 1948. The former prepared a detailed report on the condition of the Borobudur monument and suggested measures of conservation and the latter studied the art of the great monument, suggesting new identifications of some sculptures and correlating it with ancient dress and customs of the land.

[1] *Ancient Khotan*, 2 vols. (Oxford, 1907); *Ruins of Desert Cathay*, 2 vols. (London, 1912); *Serindia*, 5 vols. (Oxford, 1921); *Innermost Asia*, 4 vols. (Oxford, 1928).

[2] A. H. Francke, *Antiquities of Indian Tibet*, 2 pts., N.I.S., XXXVIII and L (Calcutta, 1914-26).

PROGRESS IN PREHISTORY

By V. D. Krishnaswami

CONTENTS

1. INTRODUCTION

ABOUT the year 1847 the scientific world was startled by the daring claim of Boucher de Perthes that he had found flint implements in the old terrace-deposits of the river Somme in France in association with a long-extinct fauna. This discovery, which caused a revolution in the prevailing views of man's antiquity, had at first to meet strong opposition but was eventually accepted by three eminent English geologists, Prestwich, Evans and Falconer, in unqualified terms before the Royal Society. In 1863 Lyell published his geological evidence about the antiquity of man. In this significant year the revelation had its own repercussions in India. Robert Bruce Foote of the Geological Survey of India discovered at Madras, on the 13th May 1863, the first true palaeolith[1] among the débris of a pit at Pallāvaram in the lateritic gravel, which

[1] Three years earlier, in 1860, le Mesurier had discovered neoliths in India.

occurs there as a bed, 2 to 3 ft. thick, overlying the granitic gneiss. This was soon followed by the discovery in great numbers of similar artefacts by him in the company of William King, also of the Geological Survey of India, in the gravel-bed of the Kortalayār at the Atrampakkam and Nāraṇavaram rivers near Madras.

From that day onwards there were chance-finds of palaeolithic implements in many parts of India from high-level gravel-beds and lateritic formations of the Coromandel coast without any associated fossils. In 1865 A. B. Wynne discovered an agate flake near Paiṭhan (Hyderabad) on the upper Godāvarī with fossil-remains, and in 1873 Hackett found a quartzite handaxe embedded in a cliff at Bhutra on the Narmadā river, also in association with fossil-mammalia. These valuable associated finds, though sporadic, were duly accorded their proper setting in the Indian Quaternary by the Geological Survey of India. Since the definition of the Plio-Pleistocene boundary had not been clearly made at this time, Falconer regarded the Godāvarī gravel as of Pliocene on the basis of the mammalian fauna as intermediate between the Miocene of the Irravady and the Siwālik hills of the existing period. Thus, H. F. Blanford said in 1867 of the Godāvarī and the Narmadā finds: 'I am much disposed to believe that we have evidence of the existence of Man at a much earlier period than Europe in co-existence with fossil fauna'.[1] He further observed that the change which had taken place in the Indian fauna since the periods of the Narmadā gravel consisted in a substitution of animals with Malaya affinities for animals with European or African affinities.

Through the keen interest maintained in this quest by Foote during the fortythree years that followed his first find, he became the pioneer in the discovery of the Stone Age in India. He found palaeoliths all over south India, roughly south of a line from Kāthiāwāḍ to Bengal. He built up during this long period a vast index-collection of prehistoric antiquities from this region and located them in the Madras Government Museum about the beginning of this century. He himself arranged them and published two works,[2] one a catalogue on a geographical basis and the other consisting of his own notes on the ages and distribution of the objects. About the same time Coggin Brown published a catalogue of the prehistoric antiquities in the Indian Museum,[3] which had been collected by the officers of the Geological Survey of India besides Foote. The arrangement adopted in this collection is primarily chronological and secondarily geographical.

Till this time the majority of finds had been found localized in southern India, though a few had been collected from Madhya Pradesh, Bihar, Orissa and Rajasthan. They had not been obtained from Burma, Assam and the Himalayan region. A perusal of both these catalogues will show that the artefacts were mostly described as 'boucher', as that was the archtype which was known in France at that time. Flakes and cores were overlooked, since they did not conform to definite and attractive shapes. Handaxes from south India were loosely described as pre-Chellean, pre-palaeolith and rostrocarinates. The Burmese flake was also described as a rostrocarinate type and was even made out as the prototype of the Godāvarī flake, which bears, as Mitra points out, a remarkable resemblance to the 'eolith' from Dorset.[4]

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[1] *Proc. Asiatic Soc. Bengal*, 1865, p. 207.

[2] R. Bruce Foote, *The Foote Collection of Indian Prehistoric and Protohistoric Antiquities, Catalogue Raisonné* (Madras, 1914); *Notes on their Ages and Distribution* (Madras, 1916).

[3] J. Coggin Brown, *Catalogue of the Prehistoric Antiquities in the Indian Museum, Calcutta* (Simla, 1917).

[4] P. Mitra, *Prehistoric India*, 2nd ed. (Calcutta, 1927), p. 135.

Till 1930 the Old Stone Age in India was very loosely interpreted on the basis of the prevailing European nomenclature, which should not have been applied freely without understanding their geological connotations. A fresh impetus to the moribund Indian Stone Age problem, however, came from Burkitt in 1930.[1] A vast collection of lithic tools from the Krishṇā basin in south India was placed in his hands by its collector, Cammiade, for his interpretation. He discovered a chronological sequence among the industries, which proved exact counterparts of those in Africa, both correlatable to similar climatic cycles. Two years later Burkitt received from Richards and Cammiade a fresh collection from the vicinity of Madras, which but confirmed his previous conclusions.[2]

Meanwhile, Helmut De Terra, working in north-west India in 1932, had discovered stray artefacts on both sides of the Himalayas (Kargil and the Salt Range south of the Potwar plateau in West Panjab). He also came to see a palaeolithic collection made in 1930 by K. R. U. Todd at Piṇḍī Gheb in the valley of the Sohan, a region from which stray palaeoliths had been reported in 1880 and which D. N. Wadia of the Geological Survey of India had noticed in 1928 as abounding in primitive palaeolithic artefacts. In such a context De Terra was necessarily led to surmise that the pluvial cycles in south India postulated by Burkitt might cohere with the northerly glaciations already noticed in the Himalayan region. The result was the well-equipped Yale-Cambridge Expedition in 1935 led by De Terra, in association with Teilhard de Chardin and T. T. Paterson, for an intensive research, by the concerted methods of geology, palaeontology and prehistoric archaeology, into the Late Cainozoic period of the country extending from the Kashmir valley across the Pīr Panjal Range and Poonch to the Salt Range between the Indus and the Jhelum.[3] The results of this expedition have been summarized by the writer in *Ancient India*, no. 3.[4]

The last decade opened with many scholars working on regional lithic industries in peninsular India. Sankalia, Subbarao, Gordon, Sen, Seshadri, Todd and the present writer have contributed to the march of prehistoric man from the palaeolithic to the neolithic times. In 1949 Zeuner conducted an expedition, mainly organized by the Department of Archaeology in India and the Deccan College Post-graduate and Research Institute, Poona, to explore the possibilities of developing research in the prehistory and geochronology of India. Two papers, by A. Ghosh[5] and B. B. Lal[6], are noteworthy as presenting a stock-taking of our knowledge relating to the earliest period of Indian antiquity mainly for the use of general readers.

In 1938 Arne Bang Anderson (Stavanger) announced in the *Congress International des Sciences Anthropologiques et Ethnologiques* (Copenhagen) that a Norwegian missionary, the Reverend P. O. Bodding, had acted as an amateur archaeologist for nearly forty years in the District of Santal Parganas. The result of his works, a collection of about three thousand artefacts, is now in the Ethnological Museum of the University of Oslo. This is the richest neolithic collection from north-east India that has gone to a European

[1] L. A. Cammiade and M. C. Burkitt, 'Fresh light on the Stone Ages of south India', *Antiquity*, IV (1930).

[2] M. C. Burkitt, L. A. Cammiade and F. J. Richards, 'Climatic changes in south-east India during Early Pleistocene times', *Geological Magazine*, LXIX (1932).

[3] H. De Terra and T. T. Paterson, *Studies on the Ice Age in India and associated Human Cultures* (Washington, 1939); H. De Terra, P. Teilhard de Chardin and H. L. Movius Jr., 'Geological and archaeological aspects of south-eastern Asia', *Nature*, 142, 13th Aug. 1938.

[4] V. D. Krishnaswami, 'Stone Age India', *Ancient India*, no. 3 (1947).

[5] A. Ghosh, 'Prehistoric exploration in India', *Indian Historical Quarterly*, XXIV (1948).

[6] B. B. Lal, 'Explorations and excavations', *Archaeology in India* (Delhi, 1950).

museum and remains to be studied. Sir Theodore Tasker came to know from Anderson at the Congress that the collection had been made by the native people for the Reverend and that no record of the artefacts was available.

The contribution made by Worman to the neolithic problem[1] deserves special mention. For the first time he has unravelled the mystery of the neolithic evolution in India, which has been closely tied to a Far Eastern focus in Indo-China. The writer deals with this phase in detail and shows, like Movius,[2] that Stone Age India did not develop, as hitherto thought, solely on an occidental but also on an oriental pattern.

Many of the recent workers in the field are my active colleagues in the field of Stone Age archaeology and have promptly sent me the results of their activities; for this I am beholden to them. Every researcher on the subject knows how useful is Das Gupta's 'Bibliography of prehistoric Indian antiquities' published in 1931.[3] To make any real headway in understanding the composite picture to be obtained by the different workers in scattered regions, I have thought it my duty to present this overall picture that emerges by collating the results already arrived at.[4] After a decade, in 1963, we may celebrate very proudly the centenary of prehistoric research in India that started with the discovery of the first palaeolith in 1863 by Bruce Foote, the unrivalled pioneer in Indian Stone Age research.

2. THE PALAEOLITHIC AGE

Prehistoric sequence is still based on Christian Thomsen's threefold division of the history of mankind into the Ages of Stone, Bronze and Iron. The initial stage is subdivided into three periods, the Palaeolithic, Mesolithic and Neolithic, or the Old, Middle and New Stone Ages. The archaeologist's Palaeolithic corresponds to the Pleistocene of the geologist, and the later Ages occur in the Holocene or the recent geological era.

In the geological Pleistocene, prolonged periods of intense cold produced great ice-sheets to cover most parts of Britain, north Germany and Scandinavia and tremendous glaciers in the Alps, the Pyrenees, the Atlas and the Himalayas. There were, in general, four such Ice Ages—glacials—separated by more genial intervals of interglacials. It is difficult to recognize the counterpart of the Ice Ages in warm regions like the Mediterranean, Africa, south India and Further Asia. There is, however, a good deal of evidence for two periods of heavy rainfall or pluvials in these regions, now oppressed with constant drought; but how the Ice Ages and pluvials should be correlated is still a matter of dispute.

[1] E. C. Worman, 'Somrong Sen and the reconstruction of prehistory in Indo-China', *South-western Journal of Anthropology*, V, no. 4 (1949); 'The neolithic problem in the prehistory of India', *Jour. Washington Academy of Sciences*, 39 (1949), pp. 181-201.

[2] H. L. Movius Jr., 'Early man and Pleistocene stratigraphy in southern and eastern Asia', *Papers of the Peabody Museum of American Archaeology and Ethnology*, XIX, no. 3 (Harvard, 1944); 'The lower palaeolithic cultures of southern and eastern Asia', *Transactions American Philosophical Soc.*, XXXVIII N. S., pt. iv (1948); 'Old World palaeolithic archaeology,' *Bull. Geological Soc., America*, no. 60 (1949); 'Old World prehistory: palaeolithic', *Anthropology Today* by Krober (Chicago, 1953).

[3] H. C. Das Gupta, 'Bibliography of prehistoric Indian antiquities', *Jour. Asiatic Soc. Bengal*, XXVII N.S. (1931).

[4] The map, pl. IX, shows the distribution of the Stone Age industries in India and the adjacent countries, based on our present-day knowledge.

In any case, the succession of the Ice Ages provides a real absolute chronometer, though the units of time it marks must be reckoned not in years or even centuries but in millennia and tens of millennia. Zeuner has recently expressed in years the duration of the Pleistocene glaciations, which gives the reader some notion of the magnitudes that may be involved. It is roughly estimated to be five hundred thousand years since the beginning of the Old Stone Age. Gordon Childe graphically brings this period to the reader's mind by showing that the Pleistocene epoch is at least ten times as long as the Recent; and that the Recent is at least three times as long as that covered by the oldest historical records of Egypt and Iraq. Since the Old Stone Age (Palaeolithic) falls entirely within the Pleistocene, it is at least five times as long as all other archaeological periods put together. In other words, if life's past, present and future on our planet are plotted on a twentyfour-hour clock, it will be seen that man appeared in the world only about a second and a half ago.

A. Pleistocene sequence in Panjab and the Narmadā valley

Only two decades back De Terra gave us a Pleistocene Ice Age chronometer through the Alpine glacial cycle in Kashmir and the periglacial quaternary sequence in Panjab as found in the Siwālik series of the Himalayan foot-hills and announced to the world the existence of a new palaeolithic culture in north India, which he named 'Sohan', (fig. 1), as opposed to the well-known peninsular palaeolithic culture (fig. 2).

De Terra demonstrated that, as far as Panjab was concerned, at Chauntrā, from the basal gravels of terrace 3, underlying the loessic Potwar silt of the Third Glacial, there was a parallel development of two divergent lithi-cultural traditions, the Madras handaxe industry and the Sohan flake and pebble industry. Thus, for the first time in Asia, Early Palaeolithic handaxe industries were discovered in north-west India in association with datable Ice-Age gravels.

There are Pleistocene formations in several river-basins in central India, but very little is known of the existence of river-terraces in them. In order to compare the facts of the Pleistocene stratigraphy and prehistory obtained in the Potwar terraces with the peninsular Pleistocene, De Terra chose the Narmadā region, as the valley had proved very rich in Pleistocene mammal fauna and palaeoliths. He demonstrated here the association of Early Palaeolithic handaxe and the flake-industries with a Mid-Pleistocene type of fauna (*Elephas namadicus*), thereby supplementing its data for Potwar, where such correlation had to be based on evidence other than palaeontological. The archaeological records in the three stages of the Narmadā alluvium are very interesting. In the lower group large flakes reminiscent of the Pre-Sohan industry of the boulder-conglomerate zone of the Potwar are found, in addition to the Abbevillio-Acheulian axes and cleavers of the Madras industry, heavily rolled cores and flakes of Early Sohan type, making it contemporaneous with terraces 1 and 2 in Panjab. However, in the upper group here the Acheulian is very much rolled, while the fresh one consists of flakes, discoidal and pebble cores of quartzite and trap, showing evolution from the Early Sohan of the Narmadā, similar to the Late Sohan industry of the north.

In this context we shall examine the recent discoveries made in Gujarat, in Mahārāshṭra and Karnāṭak regions in western India, in Mayūrbhanj, Orissa, in eastern India and in the Singrauli basin near Mirzāpur in northern India and compare the results with those already recorded for Madras, the Narmadā and the Potwar.
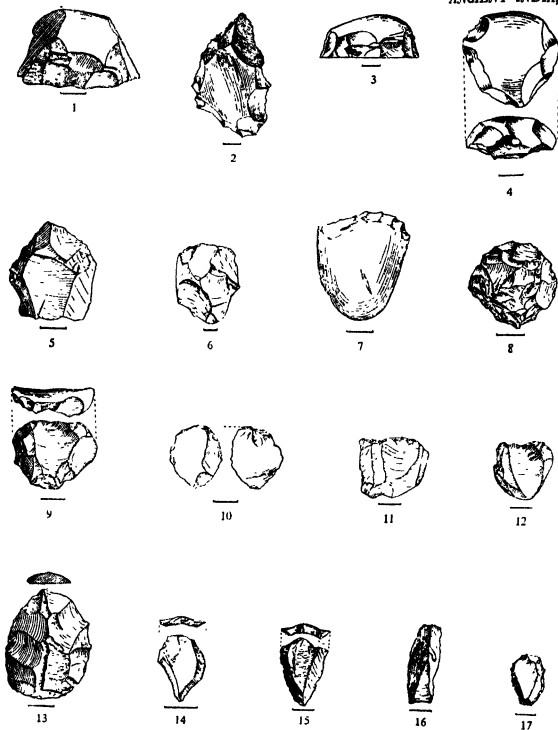
FIG. 1. *Sohan industry: 1,2,3 and 7, Early Sohan 'flat-faced' pebble choppers; 4 and 6, Early Sohan discoidal cores (Clactonian); 5, Early Sohan flake (Clactonian); 8, Late Sohan discoidal core; 9, Early Sohan core (Levalloisian); 10, Early Sohan flake (Proto-Levalloisian); 11 and 12, Late Sohan core with flakes removed from opposite ends; 13, Late Sohan core of 'turtle-back' type; 14-17, Late Sohan flakes rather elongated with faceted striking platform (Levalloisian). All from the Potwar region, West Panjab.* Scale indicated by horizontal lines, each line = 1 in.
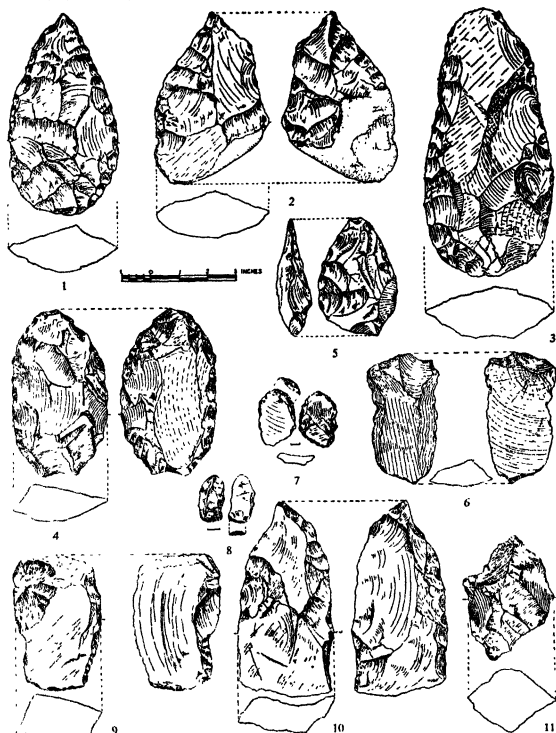
FIG. 2. *The peninsular palaeolithic or Madras industry, Acheulian types: 1, pear-shaped coup-de-poing neatly trimmed all over by controlled flaking on both sides; 2, similar to 1, but with pebble-butt; 3, massive handaxe with chisel-shaped working end; 4, ovate showing Vaal technique; 5, cordate handaxe exhibiting secondary step-flaking along the margin; 6, elongated thick flake (blade-like) with plain striking platform showing secondary marginal trimming; 7, large Levallois flake scraper with faceted striking platform showing secondary marginal trimming; 8, Levallois blade; 9 and 10, cleavers showing Vaal technique; 11, Clacton core similar to Sohan. All from Atrampakkam terrace.* Scales for 7 and 8 indicated by horizontal lines, each line = 1 in.

B. Recent discoveries in western, eastern and northern India

In the valleys of the Sābarmatī and Mahī[1] in Gujarat mixed industries of pebble tools, bifaces and flakes occur in two implementiferous horizons in the gravels and the overlying silts, but no typological succession is observed. Pebble tools characteristic of the gravels disappear from the silt. Crude tools occur alongside fine ones, and no distinct evolution is recognizable. Besides pebble tools and Abbevillio-Acheulian bifaces, discoidal cores and numerous flakes occur, recalling the Sohan. The proportion of core and flake implements appears to be equal or slightly in favour of the latter. Among the flakes, Clacton-like wide-angled unfaceted platforms are more common, but alongside a few Levallois-like low-angled faceted flakes also occur. Zeuner describes the Sābarmatī industry as a combination of Late Sohan and Middle to Late Acheulian elements well within the Pleistocene.[2] The nature of the contacts of this mixed industry and the techniques involved are yet to be determined. However, the determination of its actual age depends, as he says, on the possibilities of correlating the climatic succession of the Sābarmatī with that of the other areas, notably of Kashmir and northern Panjab.

In Madhya Bharat Old Stone Age sites were explored by Sankalia for an area of about 100 square miles (in the limits of Nīmāṛ District extending from Maṇḍaleśwar on the east to Sahasradhārā on the west) on both the banks of the Narmadā in its middle course. The stratification appears to be the same as observed by De Terra at Hoshangābād and further east. Tools were obtained from both the gravels, which are intercalated by a thick layer of yellowish clay. A large number of tools, however, lie loose in a rolled condition over the eroded banks. Statistical analysis shows that though 90 per cent of the tools are made on flakes, the industry is still bifacial. It consists of cleavers, scrapers, handaxes and flakes with prominent bulbs of wide angles and may be described as Clacto-Abbevillio-Acheulian or Sohan-Madras.

Ten miles north-west of Nāsik, a Lower Palaeolithic industry, found by Sankalia[3] at the site of the Gangāpur Dam on the Godāvarī and ascribed to the Upper Pleistocene period, is an industry in basaltic trap mostly made of flakes. This Godāvarī palaeolithic industry is bifacial and typologically akin to the Abbevillio-Acheulian from the Narmadā and the Malaprabhā. Sankalia states that there are no pebble tools here, though there is evidence of a Levalloisian trait in the industry. The flakes are mostly Clactonian in technique and relate themselves to a similar flake technique in the Madras culture. Zeuner says that typologically the cores and flakes collected from the lower gravel are difficult to classify, as they lack the characteristics of known industries.[4] This industry does not resemble that of the Sābarmatī. From a purely typological point of view it might even be classified as neolithic, though, of course, the stratigraphical position would disprove

[1] B. Subbarao, 'Archaeological explorations in the Mahi valley', *Jour. Maharaja Sayajirao Univ. Baroda*, I (1952); 'Mahi valley microlithic industry', *Proc. Thirtyninth Ind. Science Congress* (Calcutta, 1952); *Baroda through Ages* (Baroda, 1953).

[2] F. E. Zeuner, *Stone Age and Pleistocene Chronology in Gujarat*, Deccan College Monograph Series, no. 6 (Poona, 1950).

[3] H. D. Sankalia, *The Godavari Palaeolithic Industry*, Deccan College Monograph Series, no. 10 (Poona, 1952). For the prehistory of Mahārāshṭra, see Sankalia, 'Studies in the prehistory of the Deccan (Maharashtra)', *Bull. Deccan College Post-graduate and Res. Inst.*, IV, no. 3 (1943); 'Ancient and prehistoric Maharashtra', *Jour. Bombay Branch Roy. Asiatic Soc.*, XXVII, pt. i (1951); 'From history to prehistory in western India', *Proc. Fortieth Ind. Science Congress*, pt. iv, Late Abstracts (Calcutta, 1953).

[4] **Zeuner, *op. cit.***

such a classification. Perhaps they are no more than waste flakes which are nearly everywhere more common than finished implements, and more characteristic artefacts may be found in the future. Zeuner goes on to show that the rivers near Nāsik flow on a mature land-surface which has been denuded to an almost flat plateau with a few isolated inselbergs. In spite of the maturity of the landscape, however, the profiles of the rivers near Nāsik are not graded and present many nick-points which indicate the shifting of the river-beds (in solid trap) in Pleistocene times. Since Mid-Pleistocene fossils have been found at Nandur-Madhmeśwar and Paiṭhan, it is possible that a palaeontological dating of the non-fossiliferrous tool-bearing Gangāvāḍī (Godāvarī) gravel can ultimately be carried out. Near Bombay, the Khanḍivli coastal industry, discovered by Todd in 1932, would bear a close resemblance to the Godāvarī palaeolithic industry in the succession of tool-types from the lower clay to the lower gravel, viz. cores and choppers recalling a Clacton industry and passing on to Abbevillian types and evolving ultimately to Late Acheul types of handaxes and cleavers.

In the Karnāṭak region, Sankalia, Subbarao and Joshi[1] discovered twenty new palaeolithic sites in the Malaprabhā basin, besides the known sites of Khyāḍ, Alur and Menasagir visited by the writer along with Zeuner in 1949. The sites yield an inexhaustible number of palaeolithic tools, made generally on flakes of quartzite with a large percentage of cleavers. The industry is described as Abbevillio-Acheulian of the Madras region. However, it is reported to lack pebble tools.

In Mayūrbhanj, in Orissa, very near the extensive laterite sites at Kuliānā, the river-sections near Kamarpāl reveal climatic oscillations between pluvial and dry conditions.[2] The lowest exposed bed is greyish clay, overlain by a compact pebbly laterite. Above this is a deposit of boulder-conglomerate divided into two sections, separated by a thin layer of gravelly ferruginous clay. Tools have been recovered *in situ* from both the sections of the boulder-conglomerate. The tools are crude and rolled and comprise bifaces and pebble types and a few flakes. These Abbevillian bifaces and pebble tools resemble the Pre-Sohan of the Potwar boulder-conglomerate.

The Singrauli basin near Mirzāpur (U.P.) has been shown by the writer[3] as a pivotal region for revealing a contact between two tool-traditions—the Sohan and the Madras. The artefacts consist of a large series of Abbevillio-Acheulian bifacial handaxes and cleavers, with a minor assemblage of pebbles and core (chopping) tools forming 15 per cent of the collection. Though the chopper-chopping tool (Sohan complex) had influenced the Singrauli industry, the dominant phase here was a bifacial one and therefore akin to the Madras industry. The writer has further pointed out that over and above the similarity of the quartzite industry in the Singrauli and the Suvarnarekhā basins there appears to be a certain amount of development in the Singrauli industry over the Mayūrbhanj one, as the Singrauli tool-makers were initially vitalized by the Mayūrbhanj bifacial industry and advanced at a faster rate than their inspirers owing to the influence of the Sohan technique, which gave a stimulus to the flaking capacity.

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[1] H. D. Sankalia, B. Subbarao and R. V. Joshi, 'Studies in the prehistory of Karnatak', *Bull. Deccan College Post-graduate and Res. Inst.*, XI, no. 1 (1950); Joshi, *Pleistocene Studies in the Malaprabha Basin* (not printed).

[2] N. K. Bose, 'Prehistoric researches in Mayurbhanj', *Science and Culture*, VI, no. 2 (1940); 'Age of the boulder conglomerate at Kuliana (Mayurbhanj)', *Anthropological Papers*, no. 6 N.S., Calcutta University (1941); N. K. Bose and D. Sen, *Excavations in Mayurbhanj* (Calcutta, 1948).

[3] V. D. Krishnaswami and K. V. Soundara Rajan, 'The lithic tool-industries of the Singrauli basin, District Mirzāpur', *Ancient India*, no. 7 (1951), pp. 40-65.

At Deogarh in Jhānsī District, U.P., K. N. Puri discovered in 1951 a palaeolithic site in the basin of the Betwā river, a tributary of the Yamunā,[1] where one would expect palaeolithic artefacts in any number, situated that it is on the verge of the Gwalior plateau, a part of the Vindhyan tableland. This spot would appear to be a meeting ground of Sohan and Madras industries. Bifaces and core tools also occur north-eastward in south Bihar—Mānbhūm-Singhbhūm--and stray finds have also been reported by Rathindra Nath Tagore from Monghyr (north Bihar) in the Gangā valley.

In 1952 a new Sohan site was brought to light by Olaf Prüfer in the Siwāliks of the Sutlej region in Nālāgarh, PEPSU, the actual spot being Korkā-kā-Choā. The artefacts (pl. X) show a mixture of Early and Late Sohan flake-types. The site is valuable and has to be re-examined, as the Sohan sites are now on the other side of the border.

C. The palaeolithic problem

As a result of these regional studies in the palaeolithic problem of India, we are faced with the existence of pebble tools in the valleys of the Sābarmatī and Mahī and its total absence in the Karnāṭak. In the Godāvarī valley there is a peculiar flake-industry which has yet to be evaluated. Similarly, in north and east India the pebble tools of Early to Late Sohan are also found in the Singrauli basin and the Mayūrbhanj region. There has now been an awakening for placing the neglected pebble tools at their proper place in the Lower Palaeolithic culture-complex. As yet no pre-handaxe horizon, exclusively containing primitive pebble tools, like the Oldowan in Tanganyika, has come to light in India. The pebble tools of the Sohan along with the flakes develop independently of the biface-complex. It should be noted that pebble tools appear earlier in peninsular India than in Panjab. The upper Siwālik boulder-conglomerate, which is the earliest tool-horizon (Pre-Sohan flakes) in Panjab, has not revealed any pebble tool nor any biface, whereas a boulder-conglomerate horizon in Madras (as in Mayūrbhanj), which appears to be a corresponding deposit, reveals the presence of pebble tools along with biface core-tools and associated flakes. In Gujarat the pebble tools of the gravel disappear in the overlying silt. Thus, the context of the occurrence of the southern pebble tools is in sharp contrast to the northern ones. In the south the constant association of pebble tools and bifaces in the early stages with certain similarity in the basic technique suggests that they may be related elements of the same tradition, whereas the northern pebble tools, of a totally different tradition, appear to be free of the biface but are integrally associated with Clacto-Levalloisian techniques. These points have to be verified in future by intensive regional work.

3. THE HOLOCENE STONE INDUSTRIES

The stone industries succeeding the Lower Palaeolithic in north and south India pose very interesting problems to the prehistorian. As in the other parts of the Old World, is there an independent Upper Palaeolithic blade- and burin-industry in India? Microlithic industries are fairly widespread all over India. Sometimes microliths are found in association with pottery, neoliths and copper tools. Lastly, though neolithic artefacts are so widespread, we still do not know how they came into India. This triple aspect—Upper Palaeolithic, Mesolithic and Neolithic—of the post-Pleistocene industries

[1] Information from Dr. K. N. Puri.

are discussed below in the light of the recent discoveries made by Sankalia, Subbarao, Seshadri, Gordon, Worman, Sharma and others.

A. The Upper Palaeolithic

At Dhok Paṭhān, a few miles from Piṇḍī Gheb in West Panjab, a lithic site of unknown age was discovered by Todd in 1932. The pebble tools and discoidal cores are identical with the Sohan series, and flakes with convergent and parallel primary flaking are similar to those of the Late Sohan 'A'. Paterson puts this industry as 'fairly late' and, at the earliest, contemporary with the Late Sohan or even later. De Terra correlates it with terrace 4 of the Fourth Glacial in Panjab, as on the surface of its horizon occur tools presumably representing a late Upper Palaeolithic industry. The term 'Evolved Sohan' is assigned by Movius to this industry. It is possible that in north India the handaxe-industries were followed by a period of flake-industries based on the Levalloision technique. But sites with pure and typical industries are still wanting.

Carlleyle, when excavating the Marahānā (Morhānā) Pahāṛ cave-shelter in Vindhya Pradesh, found microliths stratified over earlier and larger flake implements.[1] This is yet another instance that in India, as elsewhere, there was a late Upper Palaeolithic blade- and burin-industry corresponding to the Late Magdalenian, followed in succession by larger, less geometric and smaller but more geometric microliths.

On the other hand, in south India, if one approaches the problem from the post-Palaeolithic side, the oldest industry found by Subbarao in Phase I at Sangankallu, Bellary District,[2] contains a Levalloisian element. Its heavily patinated flakes of trap and sandstone, associated with a crude microlithic industry of quartz and chert, are at least in part made of cores in the Levalloisian fashion. The long trap and sandstone flakes here indicate conical cores, and the technique is the same as is revealed in the microlithic blades also. Hence Seshadri says that this post-Palaeolithic flake-industry would be no more than a 'macro-facies' of the microlithic blades.[3] Such an association has also been seen in Hyderabad by Haimendorf.[4]

The only element in the south Indian Stone Age which might conceivably be regarded as Upper Palaeolithic is the series III industry of Cammaide and Burkitt[5] from Giddalur near Nandikanama Pass and other localities. It is characterized by slender blades with blunted back, coarse scrapers and burins (made on the thickness of the flake), planing tools and end-scrapers in lydianite. There are also microlithic crescents, which link series III with series IV here and outnumber all implements of a normal size in agate and quartzite.

A similar stratigraphic evidence has been reported by Todd from Khaṇḍivli near Bombay at the junction of the upper gravel with the upper clay.[6] Here is a blade- and

[1] D. H. Gordon, 'The stone industries of the Holocene in India and Pakistan', *Ancient India*, no. 6 (1950), p. 88.

[2] B. Subbarao, *Stone Age Cultures of Bellary* (Poona, 1948).

[3] M. Seshadri, 'Microlithic industries of Mysore', *An. Rep. Inst. Archaeology, Univ. London*, no. 9 (London, 1953).

[4] Fürer C. von Haimendorf, 'Notes on the Stone Age in India', *Man in India*, XXVIII, no. 4 (1948).

[5] Cammaide and Burkitt, *op. cit.*

[6] K. R. U. Todd, 'Prehistoric man round Bombay', *Proc. Prehistoric Soc. East Anglia*, VII (1932); 'Palaeolithic industries of Bombay', *Jour. Roy. Anthropological Inst.*, LXIX (1939); 'The microlithic industries of Bombay', *Ancient India*, no. 6.

burin-industry which appears to get into a more evolved stage in the upper clay with such types as polyhedral and angle burins and even the parrot-beak type, strongly reminiscent of the Asiatic Aurignacian of Europe and the Middle East. Thus, from the available evidence, there is no need to assume the presence of an independent Upper Palaeolithic in south India, as the microlithic industries of that region can be derived from a hypothetical Levalloisian flake-industry which preceded them. In this respect south India would not stand alone, since in north Africa the Aterian, a direct descendant of the Levalloisian, passes into microlithic industries, such as the Oranian (Ibero-Maurusian). In the opinion of Vaufrey similar is the case of east Africa,[1] where the Levalloisian Stillbay in turn passes into the Magosian and Wilton B.

There yet remains, however, the mysterious finds made by Bruce Foote in the Kurnool caves in south India. Here he brought to light a prehistoric bone-industry (akin to Magdalenian) in addition to a rich fossil fauna, partly extinct and partly later than the Narmadā fauna (above, p. 54). This valuable Upper Palaeolithic collection of the bone artefacts is lost to the world without any trace of where they were sent.

B. The mesolithic complex

Microliths have a fairly wide distribution in India, extending from Jamāl Garhī, District Peshawar in the North-West Frontier Province (Pakistan),[2] to Sawyerpuram, District Tinnevelly[3] and from Karachi in Sind (below, p. 82 and pl. XVII) to Seraikela in Bihar. In their typology they exhibit a striking similarity with the western Capsian of the Mesolithic Age. It may, in all probability, be derived from the western Mesolithic, inasmuch as the Mesolithic has not yet been found in Burma and occupies in India, as in Europe, an intermediate position between the Palaeolithic and the Neolithic, though also surviving into the later Metal Age cultures. Ghosh has aptly pointed out[4] that a careful study of the monotonous microlithic series of blades, burins, crescents, triangles, cones and arrow-heads, of triangular, trapezoid or rhomboidal section, may reveal regional differences in shapes, techniques of flaking and even the source of dispersal, as we shall see below.

In his 1949-expedition Zeuner found microliths near Tuticorin in a geological section and remarked that the microlithic industry here was succeeded by a period of intense weathering leading to the red fossil dunes (*teris*), thus indicating a considerable antiquity for this industry. The vast cultural material collected by the author in association with N. R. Banerjee and K. V. Soundara Rajan[5] are with the Institute of Archaeology, London, awaiting a full report.

De Terra found microliths of chert and chalcedony in the youngest basal gravel and sands (new alluvium) underlying the alluvial *regur* at Janakpur and Jhānsighāt on the Narmadā. This industry is dominated by small blades and scrapers and is homologous with the mesolithic culture.

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[1] R. Vaufrey, 'Note sur le Capsien', *L'Anthropoligie*, 43 (1933).

[2] Gordon, 'A survey of ancient Gandhara and archaeological miscellany', *Jour. Ind. Anthropological Inst.*, I N.S. (1945).

[3] A. Aiyappan, 'Mesolithic artefacts from Sawyerpuram in Tinnevelly District (south India)', *Spolia Zeylania*, XXIV, pt. 2 (1950).

[4] A. Ghosh, Presidential Address, Seventeenth All-India Oriental Conference, Ahmedabad (1953).

[5] V. D. Krishnaswami, N. R. Banerjee and K. V. Soundara Rajan, 'Microliths of Tinnevelly', *Proc. Thirtyninth Ind. Science Congress* (Calcutta, 1951).

Though there is lack of material for dating the earliest microlithic industries with any degree of accuracy, the proto-microlithic industries are geologically all within the Holocene. It would even appear that such industries as are indicated in the upper Nandikanama, at Khaṇḍivli and in the upper hard pan of Tuticorin could have originated in about 8000 to 6000 B.C. The evidence brought to light by the writer from the Singrauli basin for the microlithic industry found about 4 ft. below the upper alluvium on the southern banks of Baliā Nadī[1] is in conformity with the provisional dating assigned to early microlithic sites. This site is distributionally linked with the microlithic sites in Bāndā, Bundelkhaṇḍ and Baghelkhaṇḍ. The general nature of the Singrauli microliths (backed blades, parallel-sided blades, lunates, cores and coarse scrapers and arrow-heads in milky quartz) reminds us of a degenerate Upper Palaeolithic blade-tradition, and the entire industry, devoid of any associated pottery, can probably be ascribed to an early Mesolithic period.

Gordon[2] and Todd[3] remark that the microliths found on the coast of Bombay are older than those from inland, but Gordon also points out that the range of types in the former is different from and even larger than that in the latter. The former are actually simpler and somewhat cruder and contain burins, which do not occur so frequently in the latter. Lunates and straight and crescentic-backed blades, however, form the common worked artefacts in both the groups.

In central India microliths occur at a large number of sites like Pachmarhī, Hoshangābād,[4] Jabalpur and Singhanpur. In 1940 Ghosh undertook a preliminary exploration of the Pachmarhī region, the aim being to obtain a first-hand impression of the available material. An idea of the quantity of microliths from this region may be obtained from the fact that at one place (Baniā Beri cave), 4 miles to the east of Pachmarhī, over thirteen hundred pieces, including flakes, cores and 'rejects', were recorded by him from amidst 64 cubic ft. of the excavated soil.[5] In this collection there are definite examples of burins,[6] not previously recorded by Gordon in his collection.

It is necessary, as shown by Gordon, to review the sites so far found for their tool-contents to understand the minute difference from site to site, till we can follow the movement of the mesolithic culture in India and the traits it absorbs in its diffusion by culture-contact.

Seshadri, in his study of the microlithic industries of Mysore, shows the existence of three types of microlithic industries:[7] (i) Jalahalli 'hunting type'; (ii) Brahmagiri 'pre-I' type; and (iii) Brahmagiri IA and IB 'urban or village type'.

The occurrence of microlithic tools at Jalahalli on the granite bed-rock or on lateritic pallets and below a black soil up to 5 ft. thick containing Iron Age pottery in a distinct horizon appears to indicate a relatively early age for the first industry. In the Brahmagiri 'pre-I' industry there are some blunted-back and serrated blades which are not found at Jalahalli. Further, there are no arrow-heads, lunates and other hunting equipments. It is found mostly on the surface and is typologically comparable with the

[1] Krishnaswami and Soundara Rajan, *op. cit.*

[2] Gordon, *op. cit.* Of his other articles on microliths, mention may be made of 'Microlithic industries of India', *Man*, XXXVIII (1938), no. 19 and 'More microlithic sites in India', *ibid.*, no. 62.

[3] Todd, *op. cit.* (1950).

[4] M. L. Mishra, 'On some stone implements from Hoshangabad (C.P.)', *Proc. Ind. Academy Sciences*, X, no. 4 (1939).

[5] Ghosh, *op. cit.* (1948).

[6] Information from Shri B. B. Lal.

[7] Seshadri, *op. cit.*

microlithic Phase I of Sangankallu. In the third type, Brahmagiri IA and IB, the microlithic industry is associated in the main with polished stone axes. They practically disappear in the megalithic layers, the beginning of which has been dated to *circa* 200 B.C.

The excavation of 1947 at Brahmagiri[1] established for the first time a workable culture-sequence for the Deccan. Here, below the Āndhra level of the first-second century A.D. occurred a stratum contemporary with megalithic cists and pit-circles; below this, in Phases IA and IB, was a neolithic level, in which polished stone axes, etc., mixed with microliths, occurred freely in association with a pottery dull grey in colour and coarse and micaceous in texture. The use of copper and bronze in this period is attested to by a copper chisel and two thin rods, one of copper and the other of bronze. This evidence shows that the microlithic industry was essentially a feature of a pre-iron neolithic culture, when the use of copper and occasionally bronze had begun.

That there was an earlier career of the microlithic industry free from neoliths and copper has been conjectured from the surface-finds which could not be fitted into the industries of Brahmagiri IA and IB, in which lunates or burins are entirely absent. Typologically, Seshadri points out, this industry is comparable with the (microlithic) Phase I of Sangankallu, this earliest industry at Brahmagiri being therefore called Brahmagiri 'pre-I'.

All over Gujarat hundreds of microliths—from the surface and excavated—were found, mostly along the Sābarmatī as well as in the loessic hills in the interior.[2] The best known loessic hill is at Langhnāj, where different types of flakes, blades and scrapers, cores and a few arrow-heads and lunates were found. In pit I, mound I, potsherds were found in excavation down to 6 ft. Most of them were hand-made and imperfectly fired. From mound II, pits I and II, numerous fragments of fossilized bones were also found, many of them showing intentional fracturing and suggesting small microbone implements. Calcified human skeletons were also found in the excavation with skulls of the dolicocephalic type,[3] akin to the proto-Egyptian and people of north-east Africa and pointing to a genetic similarity with the western Capsian (mesolithic) cultures. The potsherds in association with the microliths in the upper layers were considered to belong to an intrusive neolithic culture. Sankalia remarks that microliths and bone splinters were found from the top layers to the bottom of the pit. After 4 ft. potsherds disappeared completely, and only microliths and bones remained. The quantity of microliths was slightly greater after 4 ft., but after that the bone-finds predominated with small and big pebbles and flat quern-like stones. The existence of quern-stones by themselves cannot give positive proof of agricultural practices. Zeuner, therefore, asserts that if the existence of domesticated types of animals in the pre-pottery microlithic horizon could be established, we should have gained a most valuable piece of information about the food-economy of the early microlithic people of India.[4]

The majority of the microlithic sites in southern Bihar, Gordon remarks,[5] is associated with the copper-belt, which starts 5 miles north of Chakradharpur and runs

[1] R. E. M. Wheeler, 'Brahmagiri and Chandravalli 1947; megalithic and other cultures in the Chitaldrug District, Mysore State', *Ancient India*, no. 4 (1947-48).

[2] H.D. Sankalia, *Investigations into Prehistoric Archaeology of Gujarat* (Baroda, 1946); H.D. Sankalia and I. Karve, 'The second Gujarat prehistoric expedition', *New Indian Antiquary*, VII (1944); H. D. Sankalia and I. Karve, *Preliminary Report on the Third Gujarat Prehistoric Expedition* (Bombay, 1945); H. D. Sankalia and A. C. Shekar, 'Microburin-like and snakehood-like artefacts from Langhnaj (north Gujarat)', *Proc. Thirtyfourth Ind. Science Congress, Delhi* (*Abstracts*) (Calcutta, 1947).

[3] Sankalia and Karve, *op. cit.* (1944).

[4] F. E. Zeuner, 'The microlithic industry of Langhnaj, Gujarat', *Man*, LII, article 182 (1952).

[5] Gordon, *op. cit.* (1950).

through Kharsawān and Seraikelā and across Dalbhūm to Rākhā Mines and Ghāṭsilā on the Suvarnarekhā. Copper slag-heaps and microliths are in close proximity, and the presence of microlithic sites from Chakradharpur and Ghāṭsilā coincides so closely with the copper-seam that it is difficult to suppose that they were not associated. In this connexion, an interesting negative evidence is worth recording that no microliths are to be found away from the copper-seam, as the exploration in Mayūrbhanj in northern Orissa has brought to light no microlithic sites, though palaeoliths and polished stone axes have been found. The writer, however, found in Bastar (Madhya Pradesh) the first microlithic site of the region in 1952.[1]

C. Microliths and pottery

(i) *South Indian evidence*

Cammiade found pottery at the microlithic sites of the lower Godāvarī and mentions that microliths were found with funeral urns at Bodalur and Adatigala and also in suspicious proximity to urns of a protohistoric period at Dhowleśwaram near the apex of the Godāvarī delta.[2] Similar finds were made by Bruce Foote at Patapāḍ and Tsanagundla Durg in Kurnool,[3] where he unearthed a carinated pot of brown ware with incised wavy line decoration and with it flakes and cores of agate and chalcedony suggesting a chalcolithic culture. The Patapāḍ site seems to present features of the overlap of the flake-blade-using stone axe culture and the iron-using megalithic culture as found at Brahmagiri. In Sub-phase IA of Brahmagiri, alongside crude microliths and polished stone axes and sherds of coarse grey ware, similar to those characteristic of Sub-phase IB, were two classes of pottery absent in the latter, viz. painted and incised pottery. From Brahmagiri, which represents the Tungabhadrā valley, we have to pass on to the valley of the Godāvarī; the Krishṇā valley, being so far completely unexplored, does not present any evidence.

(ii) *Evidence from the Godāvarī valley*

Three sites have so far been excavated in the Godāvarī valley: Nāsik on the Godāvarī; Jorwe near Sangamner on the Pravarā; and Bahal on the Girnā in East Khandesh. These Mahārāshṭra sites give us almost the same sequence of cultures as those in the Narmadā valley (fig. 3).

The core- and scraper-industry ('proto-microlithic' of Sankalia) was first discovered in stratified deposits of Nandur-Madhmeśwar and Niphaḍ in fine gravel-beds of the Godāvarī and its tributary, the Khaḍvā. The industry includes primarily scrapers of flakes, irregular cores and simple parallel-sided and unworked flakes. As at Maheśwar, no lunates or other types of blades were found. A similar industry was also discovered at Puntomba in Ahmednagar District and on the golf-ground of the Deccan College Post-graduate and Research Institute of Poona. This industry was also found associated for the first time in the lowest black soil layer in the excavation at Nāsik and later at Jorwe (Ahmednagar District) with painted pottery and copper celts or flat axes (pl. XI).

[1] V. D. Krishnaswami, 'Prehistoric Bastar', paper submitted to the Fortieth Session, Indian Science Congress, Lucknow (1953).

[2] L. A. Cammiade, 'Pigmy implements of the lower Godavari', *Man in India*, IV (1924).

[3] Gordon, *op. cit.*

Deshpande excavated at Bahal in 1951-52 and found two phases of occupation in chronological sequence, characterized by (i) microliths (pl. XII) associated with painted pottery and copper objects (pl. XIII) and (ii) sherds of the Northern Black Polished Ware in a stratified deposit in association with an inscribed sherd ascribable to the third century B.C. The painted pottery and microliths were separated from the layers with the N.B.P. Ware by a cultural débris of 12 ft. thickness and could safely be assigned to 750-1000 B.C.[1]

On the other side of the river, opposite the habitation-mound at Bahal, Deshpande encountered two types of prehistoric burials, pit-burial and urn-burial. In the former a fractional burial was found; around the pieces of skulls and ribs were also seen twenty pots, a few of which contained microliths and beads of carnelian and bones. In the latter, which also was fractional in nature, the main bulk of the pottery was black-and-red or buff exhibiting unmistakable similarity with the megalithic pottery of south India. Besides, two painted pots with black lines on red surface were also found, one each in the urn-burial and the pit-burial. The burials contained evolved microliths of chalcedony and jasper. The discovery of these burials with pottery akin to the megalithic pottery, painted pottery and microliths has created a new problem for the archaeologist. The tentative date of the burials is ascribed by the excavator to 750-600 B.C.

Painted pottery with microliths was further recorded by Deshpande from Bhojapur in Nāsik District, near Sangamner, Sinner, Kopergaon, Nevāsā and Ṭokā or Pravarā-Sangam along the Godāvarī in Ahmednagar District. He made a fresh examination of Paiṭhan and revealed the existence of the N.B.P. Ware for the first time as far south as this place. He also found in the black cotton soil in the river-cutting microliths and painted pottery. Thus, the river-valleys of the Deccan present almost an identical sequence of cultures as the Narmadā, to which we shall now turn.

(iii) *Evidence from Maheśwar in Madhya Bharat*

Sankalia reports a microlithic industry, principally associated with the black soil near Choli, 10 miles north of Maheśwar in District Nīmāṛ, Madhya Bharat.[2] The industry, named 'proto-microlithic', is described as consisting of tools much larger than ordinary microliths and comprising generally cores and scrapers of various types, 'side' and 'hollow-based'. No lunates have been found so far in this industry. Its stratigraphic position was confirmed when cores and scrapers belonging to it were found in the lowest black soil at a depth of about 45 ft. at Maheśwar. De Terra had also discovered similar tools along the Narmadā in black soil and the later (upper) fine gravel deposits, which he called 'proto-neolithic'.

A later microlithic blade-industry was found at Maheśwar associated with painted pottery and copper; it has been assigned to a chalcolithic or early Bronze Age phase and stratigraphically declared as preceding the N.B.P. Ware, i.e. prior to the fifth century B.C., which is also its stratigraphic position at Nāsik. It is a fairly widespread culture, as similar pottery is found at as many as thirtytwo sites in western Malwa. Besides knife-blades and fluted cores, there are mace-heads and different sizes of sling-stones.

[1]Information from Shri M. N. Deshpande.

[2]H. D. Sankalia, B. Subbarao and S. B. Deo, 'The archaeological sequence of central India, *South-western Journal of Anthropology, Univ. Mexico*, IX, no. 4 (1953); 'Excavations in the Narmada valley', *Jour. Maharaja Sayajirao Univ. Baroda*, II, no. 2 (1953).

Fig. 3. *Microliths of a later Stone Age culture, all of chalcedony. 1-7, from Nāvdā Ṭoli: 1, core with a crescented ridge and parallel flake-scars; 2, flake with crested ridge; 3, saw-like blade; 4, pen-knife or oliquely blunted blade; 5, crescent or lunate; 6, trapeze; 7, end-scraper. 8-12, from Jorwe: 8, crescented-ridge core; 9, core with 'ripple'-flaking on one side and fluted on the other; 10, straight-edged retouched blade; 11, pen-knife blade; 12, crescent or lunate. 13-17, from Pravarā Sangam: 13, side-scraper on a thin rectangular piece of chalcedony, with back partly worked—very characteristic of the site; 14, two-edged 'shouldered' blade; 15, rectangular scraper with retouch on three sides and on the back of one side; 16, 'crescent or lunate; 17, fine point on a fully retouched blade. 18-20, from Nāsik: 18, fluted core; 19, crescent or lunate; 20, trapeze.* Scale indicated by horizontal lines, each line = 1 in.

(iv) *Evidence from Gujarat, Saurashtra and Madhya Pradesh*

In the Sābarmatī valley the dominant feature of the later Stone Age culture at Langhnāj is the presence of microliths (above, p. 66). From the comparative rarity of pottery and the early type of microliths, it appears that this culture is probably earlier than the painted pottery culture of Maheśwar. However, the existence of a mace-head in the upper layers at Langhnāj would show that though there is no painted pottery and copper in north Gujarat, there is the definite association of a mace-head with microliths as at Maheśwar.

Dikshit has brought to light by his recent excavation (1952-53) at Tripurī, District Jabalpur (Madhya Pradesh),[1] the existence of a microlithic industry in the lowermost dark clay (*regur*) stratum between 17 ft. to 21 ft. below surface and stratigraphically below the Mauryan stratum but separated from it by a sterile deposit of yellow clay 6 in. thick. Associated with the microliths was a red painted pottery with horizontal bands in black on a bright-red surface. The sherds being small, the shape of complete vessels could not be ascertained. He, however, regards this pottery as entirely different from the red painted ware at Brahmagiri, Bahal or even Maheśwar. The microliths, except for a solitary burin and a fragmentary crescent, consist of long blades (the longest 1½ in. in length), retouched and with battered backs and even occasionally serrated. There were quite a large number of triangles. He further remarks that the tools are almost identical with the types found near the Choṭā Simlā (Jabalpur) and from Pachmarhī and other sites recorded by Gordon.

(v) *Evidence from central Indian rock-shelters*

Gordon points out[2] that black-and-red ware from mounds 1 and 2 at Langhnāj resembles the pottery found in the rock-shelters of the Mahādeo Hills, where black pottery predominates. The discovery at Langhnāj of a quern and a pestle 4 ft. below the level, where pottery was scarce, would indicate that some primitive form of agriculture was practised before pottery came into use, and the original mesolithic food-gatherers were becoming neolithic food-producers, albeit on a very restricted scale.

Regarding the contemporary use of microliths and pottery, the evidence obtained from Pachmarhī is quite similar to the results obtained by Todd's digging at Marve on the coast at Bombay.[3] At Morhānā Pahāṛ Carlleyle found 'rude pottery, roughly and simply ornamented by strokes' in association with microliths. Other instances where pottery is reported in proximity with microliths are Barapedi cave in Belgaum and Sanjroli and Akteśwar and Gardeśwar in Rājpiplā on the right bank of the Dhamni near its confluence with the Narmadā.

(vi) *North Indian evidence*

In north India pottery and flakes recalling a late palaeolithic Sohan industry were found by De Terra at Sombur in Kashmir and by him and Paterson on the alluvial deposits on the banks of the Jhelum and at Pāmpur and Burzahom. In all these places,

[1] Information from Dr. Moreshwar G. Dikshit.
[2] Gordon, *op. cit.* (1950).
[3] Todd, *op. cit.* (1950).

De Terra states, the flakes showing a survival of the palaeolithic Sohan tradition are associated with pottery-bearing layers of either neolithic or historic date.

In 1951 a cache of copper objects, consisting of a spear-head, celts, bangles, etc. (pl. XXXI), and some pottery were accidentally discovered by canal-diggers at Bahādarābād, 8 miles west of Hardwār in U.P. Sankalia points out that the pottery is surprisingly similar to that from the Narmadā and Godāvarī valleys. In 1953 Y. D. Sharma excavated the site and found an ancient occupation, 3 ft. thick, buried under upwards of 20 ft. of a barren accumulation of sand, pebbles and earth. The occupation-deposit was characterized by a homogeneous culture with pale-red ochre-washed pottery and quartzite stone flakes and implements.

The Bahādarābād lithic industry (pl. XIV), as examined by the writer, falls into three classes based essentially on the technique of fabrication. In class A the arch-type is a mammoth lunate with blunted back resulting in a cleaver-chopper. In class B a number of waste flakes, removed from river-pebbles with a diffused bulb of percussion, were seen. One waste flake is worthy of mention here, since microlithic blades appear to have been flaked off from it. Does it indicate the possibility of obtaining microliths as well from the region of this site? In class C the tools, mostly scrapers of the Sohan type, are characterized by a jagged wavy edge on one side, the other side being used as the butt.

The industry belongs to a flake-tool complex assignable to two broad facies: (i) cleaver-chopper made on a mammoth lunate, reminiscent of a microlithic lunate; and (ii) a jagged wavy-edged scraper formed by a different technique as revealed in the Early to Late Sohan industry. The former technique would very aptly be termed as 'grafting', never observed so far in the palaeolithic or the neolithic industries of north India. The latter, on the other hand, has persisted, as shown by De Terra, into the Holocene in north India at Sombur in Srinagar and at Chittā in the central Salt Range near Uchāli. We have already seen (above, pp. 67-68) that in central India and the Deccan copper objects are found with microliths and painted pottery.

D. The chalcolithic phase in India

At Brahmagiri in Mysore, Kallūr in Hyderabad and Nāsik and Jorwe in Mahārāshṭra, copper objects, specially simple flat celts, were found associated with microliths, painted pottery and sometimes polished stone axes. The term 'chalcolithic phase' in west and south-west India is restricted by the writer to that phase of the micro-neolithic culture in which copper (and presumably bronze) had also come into use though to a restricted degree. It is noteworthy that such a chalcolithic complex has not so far been revealed in the micro-neolithic industries of eastern India.

At Kallūr copper swords were found on the surface.[1] In the excavation at Yammiguḍḍa made in the trail of this discovery were found a broken flat axe of copper and a few fragments of copper pins. These were further associated with polished stone axes and microliths of the ribbon-flake blades,[2] characteristic of Sukkur and Rohri in Sind and showing marked similarities with those from the Harappā culture.

How to relate these two far-off lithic industries is a puzzling question. At Brahmagiri, in a cutting called BR 21, a copper flat celt was obtained from a layer belonging

[1] *An. Rep. Arch. Deptt. Nizam's Dominions, 1937-40* (1942).
[2] *Ibid.*, pl. X.

to the stone axe culture.[1] Again, a thin bronze rod, probably a pin, was found in association with an urn-burial belonging to an early level of the same culture. This stone axe culture was characterized by the occurrence of microliths of ribbon-flake blades without retouch, accounting for about 60 per cent of the total number. There were a few examples of crescents, side-scrapers and blunted-back types and neolithic axes of the common pointed-butt type. But there were no lunates, triangles, trapezes and real crescents, which are normal to the mesolithic culture. This is also borne out by Bruce Foote's exploration of sites in Bellary, Anantapur and Raichūr Districts. Gordon remarks that Foote's illustrated examples support his contention that in the chalcolithic period the ribbon-flake technique was employed in preference to small worked artefacts[2] (especially no. 2663 of Foote, a parallel-sided flake blade of chert from Wuttugallu, Raichūr District, which is $3\frac{3}{16}$ in. long). From a cultural point of view, in Gordon's opinion, the Maski microliths are not real microliths but a chalcolithic long ribbon-flake industry, typical of the chalcolithic repertoire of the Indus valley. He has also found deeply notched blades as have been seen at Harappā. A passing reference may also be made to a terracotta cylinder seal from Maski. Though a surface-find of no stratigraphical value, its general resemblance with Babylonian seals[3] seems to strengthen a chalcolithic context.

At Maheśwar Sankalia has discovered a 'later microlithic blade-industry' associated with a painted pottery, free from traces of iron but along with evidence of copper. This industry he has assigned to a chalcolithic age. A similar industry has been found at Nāsik and Jorwe, where flat copper axes and bangles are reported to have been found in a painted vessel, and also at Moṭā Machiālā near Amreli in Saurāshṭra.[4] The microlithic industries everywhere are represented mostly by unworked blades.

From a comparative study of the pottery Thapar points out that a double pot from Jorwe (Deshpande's collection) is closely paralleled by one from an Indus valley site in the Prince of Wales Museum collection, although the fabric is quite different. This resemblance forges another link between the Harappā and the late neolithic sites of southern India.

From the foregoing examples it is evident that in west and south-west India there existed a 'chalcolithic phase' towards the later part of the Neolithic Age, when copper implements were used, though rarely, alongside polished stone axes and ribbon-flake blades. McCown points out that polished stone axes are found in Palestine in relatively small numbers and always in connexion with copper and bronze. It appears that in the Near East copper and then bronze were discovered before the use of polished stone become widespread. It is therefore quite reasonable to suppose that the arrival of the pointed-butt ground and polished stone axe from the north-east came much later than that of the copper flat axe from the west, as appears to be very clear from the intermediate sites between Harappā and Brahmagiri.

At Brahmagiri there is one point which is of particular interest and which helps us in giving a rough date to the diffusion of the chalcolithic phase from Harappā to Brahmagiri. A polished stone axe of type Aii is the solitary example from IA culture. It is a flat square-sided axe of the north-eastern type deriving *via* Bihar from Burma and Malaya. Gordon pertinently poses a problem: is its position, so early in the sequence

[1] Wheeler, *op. cit.*

[2] Gordon, *op. cit.* (1950).

[3] B. B. Lal, 'Chalcolithic phase in south Indian prehistory', *Jour. Roy. Asiatic Soc. Bengal (Letters)*, XV N.S. (1949).

[4] Information from Shri S. R. Rao.

of stone axes in peninsular India, of any particular significance? Foote records an axe of this type from the Shevaroy Hills from the south as a unique specimen of celt. This type is celt-type 9 of Worman (below p. 75). He mentions that this type does not appear in the south, but at least four large implements resembling this were unearthed at Mohenjo-daro, and two in Strata IV-VI at Harappā. Are we to give the same antiquity to the Harappan finds as to the Brahmagiri one on the basis of this celt, which belongs to the Late Neolithic phase of eastern India? Thus, somehow one can dimly discern a two-way traffic between Harappā and Brahmagiri in that the ribbon-flake and blade-industry came down to Brahmagiri, while the flat square-sided stone axe moved up to Harappā by some process not yet clear.

E. The Proto-neolithic in Pakistan and India

With the advent of the urban chalcolithic way of life true microliths disappeared in the parts affected by this culture and were replaced by the parallel-sided ribbon-flake blades, the like of which are found at many chalcolithic sites throughout western Asia and typical specimens of which exist in the Harappā. The same is true also of the chalcolithic sites of west and south-west India; in the wilder forest-regions, however, the familiar microlithic types—the lunate, the triangle and the scraper—had necessarily to continue side by side down to later times.

The proto-neolithic flint industries brought to light in the lower Indus at Sukkur and Rohri by Evans in 1866 are quite different from the microlithic facies in India. It is characterized by thin long blades, seldom retouched, and slender conical cores, reminiscent of the blades of the Harappā, and probably represents an indigenous culture leading to the Indus civilization. Though Sukkur and Rohri are situated in close proximity and in the same limestone belt, the Rohri industry belongs only to the latest phase of Sukkur. Drummond and Paterson, in the absence of stratigraphic evidence, analysed the Sukkur industry into three categories, A, B and C, based on typology and patination. In A, blades up to 4 in. in length predominate, gradually dwindling in the latest C. The concavo-convex flakes present an evolution from A to C along with the cores. In B, the large ovate handaxes made by Levallois technique make them deceptibly palaeolithic. Category C links up with the Rohri industry and shows marked similarities with the earliest Mohenjo-daro specimens. A very late date has been assigned to these industries, as they exhibit a strange combination of various techniques never found in the Old Stone Age, and an evolutionary link between the Rohri stage and the stone industry of Mohenjo-daro is apparent.

Early pointed-butt stone axes were found in stratified excavations at the menhir site at Burzahom[1] near the village of Yenderhom between Srinagar and Gandarbal in Kashmir. De Terra found a highly black polished ware at about 5 ft. in the section. He associated this ware with the Indus valley on insufficient data, but with our present-day knowledge of the Northern Black Polished Ware the sherd can be ascribed to the early historic period. In the unweathered post-glacial loess below this level up to 12 ft. and more a proto-neolithic industry consisting of ground stone celts, bone awls and pots was found. This industry, of an apparently great antiquity as the depth of the post-glacial loess would indicate, was discounted by Paterson at Nunar, 7½ miles north-west of Burzahom. The cultural pattern of Burzahom, Gordon points out, is similar to that of Maski and Brahmagiri and shows a stone axe culture starting perhaps as early as 1200 B.C.

[1] H. De Terra, 'Excavations at Bursahom', *Miscellanea of the American Philosophical Soc.* (1936).

4. THE NEOLITHIC COMPLEX

The data set forth above amply show that a pure mesolithic culture was being slowly transformed into a microlithic pottery-using culture all over India. The existence of querns along with microliths at Langhnāj (above, p. 66) would particularly mean that some form of agriculture was practised before pottery came into use, and that the original food-gatherers were being metamorphosed into the neolithic food-producers. But Zeuner points out that unless domesticated types of animals in the pre-pottery microlithic horizon would be established, we cannot say anything about the food-economy of the early microlithic people of India. A full-fledged neolithic industry should, however, be characterized by the presence primarily of domesticated animals and plants and secondarily of pottery and smooth stone tools. That such a complex existed prior to the introduction of metal in the region is also necessary for the identification of a true neolithic site.

The large majority of neolithic artefacts collected in India consists of smooth stone tools. Most of these are axes or adzes but other types, such as hammer-stones, ring-stones, rubbing and grinding stones and mortars, are also represented. Some pottery and beads are also classed as neolithic because of their association with smooth stone tools. Except, however, in the excavations at Brahmagiri and Sangankallu, revealing real neolithic industries, such association has not been definitely established.

A. Worman's classification

The polished stone axes and adzes displayed in Indian museums are collected from the surface and are devoid of archaeological context. Worman, while plotting the sites at which smooth stones have been found, shows that they occur almost exclusively in eastern, central and southern India, south of the Gangā flood-plain, north of Pudukkoṭṭai in Madras and east of the line in a south-south-western direction from Lucknow in U.P. to Goa on the south-west coast.[1] Some celts are found also in parts of Kashmir and Panjab in north India, and a few have been found in the chalcolithic sites of the Harappā culture and at Nāl and Rānā Ghunḍai in Baluchistan. The fact that the distribution of these celts is confined to the eastern half of India is probably significant, and Worman has rightly been led to an interesting speculation as to the point of origin of the Indian neolithic celts based on their techniques of manufacture and typology.

Two basic techniques are indicated in the fabrication of the celts:

Technique 1 involves two main steps, chipping and smoothing sometimes with an intermediate pecking between the two. The transverse section of a tool made by this technique is either ovoid, lens-shaped, trapezoidal or triangular.

Technique 2 involves only chipping and smoothing; the resultant implement is flat-faced with perpendicular sides giving a rectangular transverse section. Smoothing usually covers more than half the surface of the celt, and a high shiny polish over most of its surface is common.

Based on the above techniques, twelve basic types of celts were revealed by Worman and classified by him into three groups:

[1] Worman, *op. cit.*

Group I.—It has four celt-types: (1) oval, (2) elongated, (3) triangular and (4) rectangular. Nos. 2 and 3 are the most common of all forms, notably in north, east, central and south India. No. 1 is found sporadically in east and south India, while no. 4 is primarily southern but is also known in east and central India. The celts of this group are the oldest and the basic of all types in India.

Group II.—It comprises four celt-types completely pecked or completely smoothed by both techniques, cylindrical or rectangular to triangular with circular, oval or square section, found usually in large size 20 to 25 cms. in length. It is found mainly in eastern India and to a smaller extent in central India and rarely in the south. Types 5 and 6, trapezoidal and triangular in shape, are usually tiny in size, from 4 to 7 cms. in length. Both are confined to eastern India, though a few occur in central and south India as well. Type 8 is the shouldered adze, curvilinear or rectilinear in shape, and is altogether confined to eastern India, although a few specimens occur in central India as also along the Godāvarī and in Mysore State. These celts are intermediate in date and reflect the introduction of a new manufacturing technique and new shapes into India from the east.

Group III.—The four types under this group are manufactured by technique 2; in shape they are trapezoidal, rectangular or triangular and are of metal prototype; transverse sections are rectangular with parallel sides. Type 9 is found extensively in east India, a few in central India, but none in south India; it was also found at Mohenjo-daro. Type 10, rectangular, is entirely limited to east India. Type 11, triangular, and found only in adze-form, is limited to Orissa, including Mayūrbhanj. Type 12, again of metal prototype, is confined to east India. The celts of this group are the latest and most highly developed of all the Indian types. Three of them are entirely confined to eastern India and indicate the latest arrivals in India from recent derivatives from the east.

The distribution of these groups brings out the following facts:

1. Each succeeding group of celt, beginning with group I, is not only technically more evolved than the preceding one but is also limited in its distribution towards eastern India, the only part of the country where all the twelve types occur.

2. The distribution of these three groups substantiates the theory of the introduction of celts and celt-making technique into India from the east rather than the west, as based on the 'Kultur Kreise' approach, viz. the determination of the age of an element from the extent of its distribution (diffusion).

If the age-area approach to the dating of the three groups of the celts is true, the stone implements from India should resemble those from eastern Asia more closely than those from the Middle East.

B. Data from the Middle East

The celt-finds from north-west India, at Mohenjo-daro, Harappā, Nāl, etc., are all from Metal Age levels, the only exception being those from Rānā Ghundai,[1] and therefore do not belong to a neolithic culture-complex. In western Iran and Iraq celts are seldom well-described, but the evidence from twenty sites in the Middle East shows that the stone celts are also associated with copper and other metal objects in levels

[1] E. J. Ross, 'A chalcolithic site in northern Baluchistan', *Jour. Near Eastern Studies*, V, no. 4 (1946).

definitely of Metal Age date. Worman points out that celts found westwards are more often like the supposedly early Indian type made by technique 1, while those found eastwards more frequently resemble the later Indian types made by technique 2. Such an evidence wholly supports his theory of an eastern origin for the neolithic techniques of stone-working in India.

C. Stratigraphic sequence in the Far East

In Burma, as in India, neolithic celts are mostly collected from the surface. Typologically celt-types mentioned above (p. 75) are found in Assam and Burma except nos. 4, 11 and 12. It is clear, therefore, that Assam and Burma form the corridor through which celt-making techniques entered India.

The key to the neolithic problems of the whole of south-east Asia is found in Indo-China in the Bacsonian culture-complex as developed in caves and rock-shelters near Hoabinh and in the Bacsonian limestone massif in Tonkin province. The stratigraphical sequence disclosed at these two places is given below in a tabular form and is correlated to the three phases of the neolithic industry in India as revealed by the 'Kultur Kreis' approach, based on typology of the Indian tools. In Early Bacsonian, stone smoothing as a neolithic trait appears for the first time. The celts are similar to the Indian types 1 and 2. In mid-Bacsonian pottery occurs for the first time with traces of agriculture. Celts are more varied with a likeness to Indian types, 1, 2, 3, 6 and 7. In Late Bacsonian and Somrong Sen, the latest types of celts are found, and the forms include Indian types 2, 4, 6, 8, 9 and 11 and possibly 10. Hand-made pottery is abundant. There is, therefore, Worman points out, strong stratigraphic proof from Indo-China that celts, of the types also found in India, were introduced into the culture of that area in the same chronological order as they are believed to have been introduced in India. Further, the technique of pecking, lacking in Indo-China and south China but seen mostly in the late neolithic celts of north China, would argue for this new technique being introduced into India directly some time prior to the entry of types 9 and 12. Along with this it is also shown that type 10 as well must have come from north China, as they are very late in south-east Asia.

TENTATIVE CORRELATION OF THE NEOLITHIC INDUSTRIES OF INDIA AND INDO-CHINA[1]

India	Indo-China
Late Neolithic (types 9, 10, 11 and 12) Chakradharpur and Haribeiā sites in Singhbhūm. Brahmagiri IB.	*Late Bacsonian—Somrong Sen* Celt-types 2, 4, 6, 8, 9, 10 and 11. Plain and decorated hand-made pottery abandant. Domestic dog. Agriculture lacking.
Mid-Neolithic (types 5, 6, 7 and 8) Burzahom industry in Kashmir. Brahmagiri IA and IB. Sangankallu Phase II. Surface-collection from Bellary, Hyderabad and Raichūr.	*Mid-Bacsonian—Late Hoabinhian* Celt-types 1, 2, 3, 6 and 7. Smoothing of the cutting edge appears. No animal husbandry. Traces of agriculture.

[1] Based on the similarity of artefacts of various stages of cultural development. The celt-types are those of Worman, *op. cit.*

Early Neolithic (types 1, 2, 3 and 4)
Brahmagiri 'pre-I' type.
Sangankallu Phase I.

Early Bacsonian—Mid Hoabinhian
Celt-types 1 and 2 appear for the first time.
Stone chipped, smoothing appears.
Traces of agriculture.

Mesolithic
Singrauli microliths.
Langhnāj industry of microliths and bone tools.
Khanḍivli upper clay.
Jalahalli 'hunting type'.
Upper Nandikanama.
Tuticorin *teri* microliths.

Early Hoabinhian
Lithic industry based on rounded river-pebbles and roughly chipped.
Neolithic traits conspicuously absent.

D. Archaeological evidence in India

' The neolithic collections of Worman from Bellary, Hyderabad and Raichūr in south India include chipped, ovoid, elongated choppers, bifacial chipped axes, short axes with smooth cutting edges, scrapers, triangular Bacsonian or Late Hoabinhian. At Sangankallu, near Bellary, Subbarao has shown in stratigraphic sequence that Phase I is separated from Phase II by a sterile layer and that in the former Phase the heavily patinated flakes of trap and sandstone were associated with a crude microlithic industry of quartz and chert with no pottery. Seshadri says that this heavily patinated flake-industry in Levallois technique would leave the impression that the microlithic industries of south India (proto-microlithic) can be derived from a hypothetical Levalloisian flake-industry which preceded them,' but to Subbarao the same industry is, in all probability, an early (proto-neolithic) industry, which developed into a full-fledged neolithic polished axe industry of Phase II.[2] Phase II includes early types found in groups I and II of Worman, except type 8, which is wholly confined to east India, central India, on the Godāvarī and Mysore State.

At Brahmagiri, it may be recalled, was encountered the neolithic culture in its last stage, when copper and bronze had already made their intrusion, between the beginning of the first millennium B.C. and *circa* 300 B.C., but along with the polished stone axes microliths were also used.[3]

In east India a rich neolithic factory-site on the Sanjai valley, 4½ miles south-east of Chakradharpur in Singhbhūm District, south Bihar, was found by Sen[4] in 1939 on a high ground above the alluvial flood-plain. Typologically the finds include a large number of chipped, ground and polished celts and potsherds. Seven stages have been traced from the chipped celt (the basal type) to the fully polished celt (the end-type) in the series. Pecking technique is also visible. There are early types of group I, triangular in shape and ovoid in section. A few types show rectangular and square sections, suggesting chisels. The illustrations indicate that types 9 and 10 of group III (above, p. 75) are also to be found in this collection. This factory-site will fit into the Middle to Late Bacsonian sequence (middle to late neolithic in India).

In 1952 Kar discovered in the same region a new neolithic site at Hariberā on the bank of the river Karkhai, a tributary of Sanjai, in Singhbhūm, on the borderland of Bihar

[1] Seshadri, *op. cit.*
[2] Subbarao, *op. cit.* (1948).
[3] Wheeler, *op. cit.*
[4] D. Sen, 'A celt-site in Singbhum', *Man in India*, XXX, no. 1 (1950).

and Mayūrbhanj.[1] He says that the site is similar to some of the neolithic sites on the banks of the river Sanjai near Chakradharpur noticed by Manoranjan Ghosh and described by Sen. The two most important artefacts (pl. XV) in his collection are Hb. 1 and Hb. 2, described below:

Hb. 1.—A chisel of extremely large size, being 18 cms. long and 7 cms. in section, and of heavy weight. It is intermediate in type between 9 and 10 of Worman. It is chipped and partially smoothed and ground, the convex chisel-end bearing a greater polish.

Hb. 2.—A broad chisel, fairly large and heavy and broken towards the butt-end. It corresponds to type 9, being trapezoidal in shape. The transverse section is triangular; it is chipped all over with no smoothing. Its extant length is 15 cms. and it is 18 cms. in section. One side shows parallel lines.

These two types occur exclusively in east India, and only a few have so far been found in central India.

In 1950 a new neolithic site in south Mānbhūm was found at the base of Jambira hills near Nimdih station.[2] The area is inhabited by an important branch of the Mundās (the Bhumij), who claim to be autochthons of the place and have a living megalithic culture of their own.

E. The significance of the shouldered adze

Shouldered adze, type 8 of Worman, is confined to east India, though Rivett-Carnac claims to have discovered one example in central India.[3] Cammiade found another near the Godāvarī river-mouth in a microlithic milieu,[4] and Worman appears to have found an unfinished specimen in northern Mysore.[5] Hutton also saw a similar type in iron in Mysore.[6] Stratigraphically it is found in Late Bacsonian in Indo-China, and therefore, it should have come to India in late neolithic times.

This neolithic shouldered adze-type has been associated with the Mon-Khmer-speaking Khasiās in Assam and with Indo-China, the Irrawady valley in Burma and the Malaya Peninsula. It is also the old Polynesian form[7] and occurs in Obsidian in Easter Island. Westwards of Assam it occurs in the Sawara country in the Madras Agency and occasionally in Santal Parganas and has also been found in a copper form in parts of Chota Nagpur. At all these places the association of the shouldered hoe with the Austro-Asiatic language is inescapable. A characteristic feature of this language-group is the erection of the megalithic menhirs. The close parallels between megalithic rituals of the Bastar Maria Gonds, Austro-Asiatic hill-tribes of Orissa and Chota Nagpur and the Nāgās and Khasiās of Assam provide evidence for a genetic connexion between all

[1] Information from Shri R. C. Kar.

[2] C. S. S., 'Discovery of some prehistoric stone tools in south Manbhum', *Science and Culture*, XVII (1951).

[3] H. Rivett-Carnac, 'On stone implements from the North-western Province of India', *Jour. Asiatic Soc. Bengal*, LII (1883).

[4] Cammiade, *op. cit.* (1924).

[5] Worman, *op. cit.*

[6] J. H. Hutton, 'Man and Munda in India and beyond', *Proc. National Inst. Sciences of India*, nos. 1 and 2 (1935).

[7] *Ibid.*

these manifestations of megalithic culture concentrated in the tribes of well-developed agricultural civilizations characterized by the use of hoes. Haimendorf points out that two neolithic cultures seem to be responsible for this: the culture characterized by the Burmese shouldered adze and that of the highly finished celts with quadrangular section.[1] The present evidence points out that 'there has been an amalgamation of these two industries on the Asiatic main-land which ultimately resulted in the polished shouldered adze with quadrangular section in late neolithic times'. Bastar is the key-place in India to test the neolithic problems, as the hill Marias of Abujhumar are the least affected by cultural contacts later than the neolithic as shown by the writer's exploration of Bastar in 1952.[2]

5. ACKNOWLEDGEMENTS

The writer takes this opportunity of thanking his colleague Shri B. K. Thapar and Technical Assistant Shri M. K. Dhavalikar for the assistance in the compilation of the data. Thanks are also due to Shri M. B. Limaye, Photographer, and Shri V. B. Mathadhikari, Draftsman, for the illustrations accompanying the article.

[1] Haimendorf, *op. cit.*

[2] V. D. Krishnaswami, 'Prehistoric Bastar', paper submitted to the Fortieth Session, Indian Science Congress, Lucknow.

PROTOHISTORIC INVESTIGATION

By B. B. LAL

CONTENTS

WHAT has been achieved by the Archaeological Survey of India since its inception in 1902 in the field of protohistoric archaeology is most remarkable indeed. The truth of this seemingly bold statement would be brought home at once if it is pointed out that in the year 1902 not even a substantial paragraph could have been written on the topic, since, except for the copper implements from Gungeriā, Biṭhūr, etc., which, too, were hanging in a chronological vacuum, nothing else was known of India's past before the Mauryan period. To cite an example, this is what Vincent A. Smith asserted in 1905: 'India had no Bronze Age; that is to say, she *never* passed through a stage of civilization marked by the general employment of bronze, an alloy of copper and tin, for the manufacture of such implements and weapons as have been made ordinarily of iron or steel since the beginning of the present Iron Age.'[1] In those days it was the general belief that India's history began only with the Mauryas or, say, with the invasion of Alexander the Great in 327-26 B.C.

1. THE INDUS AND GHAGGAR VALLEYS AND BALUCHISTAN

This state of affairs continued till as late as 1920. In 1921, however, an altogether new vista of India's past was suddenly thrown open with the excavations carried out by Daya Ram Sahni at Harappā in Montgomery District, West Panjab.[2] Although the site had been known to archaeologists for a long time, it was left to Sahni to reveal and emphasize the chalcolithic nature of the ruins. In the following year R. D. Banerji discovered the remains of an identical culture at Mohenjo-daro in Larkānā District, Sind.[3] The thread was then taken up by Sir John Marshall, who, with the assistance of H. Hargreaves, K. N. Dikshit and M. S. Vats organized large-scale excavations at Mohenjo-daro. The results of the work done at this site up to 1927 were published by

[1] V. A. Smith, 'The Copper Age and pre-historic bronze implements of India', *Indian Antiquary*, XXXIV (1905), p. 229.

[2] *An. Prog. Rep. Supt. Hindu and Buddhist Monuments, Northern Circle*, 1921 (Lahore, 1922).

[3] *Prog. Rep. Arch. Surv. Ind., Western Circle*, 1920 (Calcutta, 1921).

Marshall and his colleagues in three monumental volumes.[1] Further work here was carried out by E. J. H. Mackay from 1927 to 1931.[2] While Mohenjo-daro received attention at the hands of Marshall and Mackay, Harappā was excavated, from 1926 to 1931, by Vats.[3]

Once the archaeological importance of these cities became known, the necessity of an all-out hunt for more sites of similar or allied type became imperative. Thus, N. G. Majumdar carried out exploratory work in Sind between 1927 and 1931 and brought to light a large number of chalcolithic sites, the more important amongst them being Chanhu-daro, Ghāzī Shāh, Lohrī, Alī Murād, Amrī, Jhūkar, Jhāngar and Trihni.[4] In a fateful expedition of 1938 he also explored the foot-hills of the Khirthār range.[5]

Activities were not confined to the Indus valley alone. In 1929 Vats put on the protohistoric map of India the site of Koṭlā Nihang in Ambālā District, Panjab.[6] In 1935 he further noted the existence of a chalcolithic culture at Rangpur in Kāthiāwār.[7] In the hilly tracts of north and south Baluchistan, work was carried out by H. Hargreaves and Aurel Stein. While the former excavated a cemetery at Nāl in 1925-26,[8] the latter discovered, between 1926 and 1928, several notable sites including Suktagen-dor, Shāhī Tump, Kulli, Mehī, Nūndara, Ḍabar Koṭ, Periāno Ghunḍai, Rānā Ghunḍai, Moghul Ghunḍai, Sūr Jangal, etc.[9]

In 1931 fell the axe of financial curtailment on the Department, and exploration work had to be suspended. After a lull of full fifteen years the spade went into action once again at Harappā. This time R. E. M. Wheeler revealed that one of the mounds at Harappā was in fact a citadel—a discovery which revolutionized our conception of Harappan sociology and administration.[10] In 1950 he made fresh cuttings at Mohenjo-daro bringing to light a granary within the citadel area.[11] In 1951 A. Ghosh launched a systematic survey of the dry bed of the Ghaggar in Bikaner[12] and discovered nearly twentyfive settlements, the more important being those at Kālībangā, Tarkhānewālā-ḍera, etc., with Harappā pottery (pl. XXVII) and other objects including a fragmentary seal (pl. XXVIII A) and chert blades (pl. XXVIII C). Excavation now being conducted at Rupar, District Ambālā, has confirmed the existence of a Harappā settlement at the site and has yielded an assemblage of Harappā objects, of which a few complete pots and a seal are illustrated here (pls. XXIX A and XXVIII B).

To this Government-sponsored work may be added valuable researches of certain institutions and individuals. Leading an expedition of the School of Indic and Iranian

[1] J. Marshall and others, *Mohenjo-daro and the Indus Civilization*, 3 vols. (London, 1931).

[2] E. J. H. Mackay, *Further Excavations at Mohenjo-daro*, 2 vols. (Delhi, 1937-38).

[3] M. S. Vats, *Excavations at Harappā*, 2 vols. (Delhi, 1940).

[4] N. G. Majumdar, *Explorations in Sind*, Mem. Arch. Surv. Ind., no. 48 (Delhi, 1934).

[5] Krishna Deva and D. E. McCown, 'Further Exploration in Sind: 1938', *Ancient India*, no. 5 (1949), pp. 12-30.

[6] *An. Rep. Arch. Surv. Ind.*, 1929-30 (1935), pp. 131-132.

[7] *An. Rep. Arch. Surv. Ind.*, 1934-35 (Delhi, 1937), pp. 34-38.

[8] H. Hargreaves, *Excavations in Baluchistan, 1925*, Mem. Arch. Surv. Ind., no. 35 (Calcutta, 1929).

[9] A. Stein, *An Archaeological Tour in Waziristan and Northern Baluchistan*, Mem. Arch. Surv. Ind., no. 37 (Calcutta, 1929); *An Archaeological Tour in Gedrosia*, Mem. Arch. Surv. Ind., no. 43 (Calcutta, 1931).

[10] R. E. M. Wheeler, 'Harappā 1946: the defences and cemetery R 37', *Ancient India*, no. 3 (1947), pp. 58-130.

[11] R. E. M. Wheeler, 'Newly found at Mohenjo-daro: a huge 4000-year-old granary', *Illustrated London News*, May 20 and 27 and June 3, 1953.

[12] A. Ghosh, 'The Rajputana Desert—its archaeological aspect', *Bulletin of the National Inst. Sciences of India*, no. 1 (1952), pp. 37-42.

Studies of the U.S.A. in 1935, Mackay carried out further excavations at Chanhu-daro.[1] Between 1935 and 1940 E. J. Ross made an excellent study of the protohistoric remains in the Zhob and Loralai districts of north Baluchistan, with particular reference to Rānā Ghuṇḍai.[2] Stuart Piggott brought to light in 1946 a new ceramic industry from Quetta[3] and in 1950 published his valuable book, *Prehistoric India.*[4] Miss B. de Cardi explored sites with Togau and Londo wares in 1948,[5] whilst W. A. Fairservis added useful information regarding early cultures in Baluchistan.[6] Last but not the least, mention must be made of V. Gordon Childe's excellent analysis of the Indus material in its wider context in his *New Light on the Most Ancient East.*[7]

The foregoing facts serve to emphasize the vast efforts that lie at the back of our knowledge of protohistoric cultures in north-western India. And even then the story is far from complete, for, while a fairly reasonable picture is available of the Harappā civilization, very little is known about its origin, adolescence and survivals.

A Stone Age industry that might be looked upon as prefatory to the later chalcolithic cultures of the Indus valley and Baluchistan is probably that found at Sukkur and Rohri.[8] The long thin blades of chert or flint, so typical of Harappā, Amrī and other protohistoric cultures, formed a constituent of the Sukkur-Rohri industry, which, on the basis of more archaic types like Levallois flakes and handaxes, may have well antedated the chalcolithic cultures. Another lithic industry that deserves consideration in this context is that from a golf-course, 8 miles north-east of Karachi. During 1951 the present writer noticed in the British Museum a collection of tools from this site made by K. R. U. Todd several years ago. The artefacts include long blades, points, trapezes and crescents, besides fluted cores (pl. XVII). It would be desirable to explore the area further and to find out if any pottery is associated with these tools. Further, the tool-types should also be compared with those from west Asia,[9] to discover similarities, if any. This may throw some light on certain protohistoric migrations into India. Existence of a pre-pottery microlithic culture has been reported by Fairservis at Kile Gul Mohammed in Baluchistan[10]. Here the inhabitants lived in mud-brick houses, domesticated sheep and possibly cultivated crops. In the absence of any definite basis it is difficult to be positive about the dates of these early cultures; broadly, however, the Kile Gul Mohammed culture may be placed early in the fourth millennium B.C.

In the Zhob valley, too, there is evidence of fairly early settlements. Ross' work at Rānā Ghuṇḍai demonstrated five occupational periods,[11] christened by Piggott as

[1] E. J. H. Mackay, *Chanhu-daro Excavations, 1935-36* (New Haven, 1943).

[2] E. J. Ross, 'A chalcolithic site in northern Baluchistan, *Jour. Near Eastern Studies*, V (1946), no. 4, pp. 284-316.

[3] S. Piggott, 'A new prehistoric ceramic from Baluchistan', *Ancient India*, no. 3, pp. 131-142.

[4] S. Piggott, *Prehistoric India*, Pelican Series (Harmondsworth, 1950).

[5] B. de Cardi, 'On the borders of Pakistan: recent exploration', *Arts and Letters* (Royal India, Pakistan and Ceylon Society), XXIV, no. 2 (1950), pp. 52-57; 'A new prehistoric ware from Baluchistan', *Iraq*, XIII (1951), pp. 63-75.

[6] W. A. Fairservis Jr., 'Preliminary report on the prehistoric archaeology of the Afghan-Baluchi areas', *Noviates, American Museum of National History*, no. 1587 (1952), pp. 1-39.

[7] V. Gordon Childe, *New Light on the Most Ancient East*, 2nd ed. (London, 1952).

[8] H. De Terra and T. T. Paterson, *Studies on the Ice Age in India and Associated Human Cultures* (Washington, 1939), pp. 331-336.

[9] D. A. E. Garrod and D. M. A. Bate, *The Stone Age of Mount Carmel* (Oxford, 1937).

[10] Fairservis, *op. cit.*

[11] Ross, *op. cit.*

RG I-V, from bottom upwards.[1] The people of RG I used plain hand-made pottery and flint blades, tended cattle and lived in huts. During RG II vases were turned on wheel and painted in black pigment over red or pale surface with designs including stylized bull and black buck. There is a striking similarity between this pottery and that of Hissar I, and it is not unlikely that it represents an infiltration from the Iranian uplands in the second half of the fourth millennium B.C. RG III is distinguished by several cultural advancements (evidence from Rānā Ghunḍai and other allied sites). The houses were now made of mud-bricks on rubble-foundation and the use of copper is also attested to. Clay figurines of women with grim faces might represent the Mother Goddess in her 'guardian-of-the dead' aspect. A phallus carved in stone from Moghul Ghunḍai is also to be noted. In pottery too there developed a polychrome style, though monochrome ware was still in use. The presence of RG III type of pottery below the defences at Harappā[2] indicates that it was of an earlier date, though there seems to be an overlap in the RG IIIc stage. RG IV and V, being post-Harappan in date, will be considered later.

Another ceramic industry which seems to have a claim for high antiquity is that from Quetta.[3] The ware has a pinkish-white to greenish surface over which geometric designs are executed in purplish brown pigment. According to Professor Piggott, 'the Quetta ware really does seem comparable to that represented by the Tal-i-Bakun site itself, Susa I, Giyan V and Sialk III, and may be equally early in date' (*circa* 3500 B.C.). Evidence, however, is accumulating to show that the ware persisted even later. The Amrī ware, distinguished by its thin section, buff to light-red background and black or reddish-brown painted designs (essentially geometric) is known, on stratigraphic evidence, to have been earlier than the Harappā culture.[4] The Togau ware, having a red slip and black-painted geometric and animal motifs, is also pre-Harappan in origin, though there may have been a subsequent overlap.[5] Another culture which came into being before the Harappā culture but continued to exist alongside it is that represented by the cemetery at Nāl, wherein both complete and fractional burials occur, the latter being more predominant.[6] The associated pottery is pale or greenish buff, with designs executed in multiple colours—black, blue, yellow, red, etc. Flat axes and knives of copper also formed a part of the cultural assemblage. Lastly, mention must be made of the Kulli-Mehī culture, which is distinguished by its buff ware, bearing animal-*cum*-landscape motifs, and typical clay figurines.[7] The pottery is reminiscent of the Scarlet Ware of the Early Dynastic times in Iraq and may thus be placed, in its early stages, in the second quarter of the third millennium B.C. Such a synchronism is also attested to by the occurrence of small compartmented pots of stone with incised patterns both in the Kulli culture and in Early Dynastic Iraq. There is, however, evidence to show that the Kulli-Mehī culture survived into Harappan times.

In marked contrast to the above-mentioned localized rural cultures was the great city-civilization represented at its best at Harappā and Mohenjo-daro but in fact covering a much wider area, from the Makrān coast in Baluchistan to the foot of the Himalayas in east Panjab.[8] The first thing that catches the eye of a visitor to Harappā and

[1] Piggott, *op. cit.* (1950), pp. 119.
[2] Wheeler, *op. cit.* (1947), pp. 90 ff.
[3] Piggott, *op. cit.* (1947).
[4] Majumdar, *op. cit.*, pp. 24 ff.
[5] de Cardi, *op. cit.* (1950).
[6] Hargreaves, *op. cit.*
[7] Stein, *op. cit.* (1931), pp. 118 ff. and 154 ff. and pls. XXI-XXIII and XXVIII-XXXII.
[8] The map, pl. XVI, shows the distribution of the Harappā and other cultures, and the synchronical chart, pl. XXXVII, their approximate chronological positions.

Mohenjo-daro is their systematic planning. At both the places one sees two prominent blocks of mounds, a higher but smaller on the west and a lower but much larger on the east. As excavations have revealed, the western mound was the fortified citadel, while the eastern mound was the town itself. At Mohenjo-daro the eastern mound has been sufficiently excavated, and it has been observed that the main streets ran north-south and east-west cutting one another at right angles (pl. XVIII). The houses were made of kiln-burnt bricks. Usually, they had three to four living rooms, a bath and a kitchen, but the more elaborate ones, some of which were double-storeyed too, had sometimes as many as thirty rooms. Most of the houses were provided with a well, and an excellent underground drainage system operated throughout the city to flush out the refuse-water.

The citadel at Mohenjo-daro stood on a 20 ft. high artificial platform of mud and mud-bricks and was provided with a system of fortification which included massive towers of burnt bricks. Within it were located: a public bath, 39 ft. long, 23 ft. wide and 8 ft. deep with a number of 'cloak-rooms' along the perimeter (pl. XIX); a college, covering a space 237×78 ft. and consisting of several rooms arranged around a central courtyard; a 90-ft. square pillared hall presumably meant for holding assemblies; and a large-sized granary provided with adequate ventilation.

The citadel-defences have been more adequately explored at Harappā than at Mohenjo-daro. At the former site they consisted of a mud-brick wall, 45 ft. wide at the base and tapering upwards, further strengthened with a 4 to 6 ft. wide burnt-brick revetment on the outside (pl. XX). Rectangular bastions were provided at regular intervals. Of the gates, the western one has been identified by excavation (pl. XXI). The interior of the citadel was raised on a 20 to 25 ft. high platform, and consequently the entrance-passages were in the form of ramps and terraces. Within the shadow of the citadel, a little to its north, lay the industrial area containing: two rows of what evidently were coolie-quarters, each quarter having a courtyard and a room; several pear-shaped furnaces; and five rows of circular brick platforms for pounding grains. Further to the north were two symmetrical blocks, each consisting of six granaries of uniform size, viz. 50×20 ft. (pl. XXII). The whole lay-out speaks of a highly centralized régime, which, for all one can guess, must have emanated from the citadel itself.

There is evidence to show that in those days the climate was much milder than it is today. Besides, the proximity of the Indus and Rāvī respectively in the case of Mohenjo-daro and Harappā was greatly conducive to agricultural operations. Thus, the people produced bumper crops of wheat and barley, besides gardening peas, melons, bananas and the like. To their dietary were added fish, fowl, mutton, beef and pork. Besides the cattle, both humped and humpless, cats, dogs and possibly elephants were domesticated. The evidence regarding the horse and camel is inconclusive. Amongst wild animals, mention may be made of the tiger, bear, *sambhar*, bison, rhinoceros, etc.

Even at this remote period of history cotton was used for textile in India, although the corresponding civilizations of Egypt and Iraq did not produce any such thing for a long time to come. But not much evidence is forthcoming regarding the dress of the people. The portrayal of a man on a potsherd from Harappā suggests the use of *dhotī*, while shawl as an upper garment is indicated by the well-known steatite statue from Mohenjo-daro (pl. XXIII A). The hair was dressed in a variety of ways. The men wore their hair short, trimmed the beard and shaved the moustache. The women gathered up their long hair in a bunch behind, secured by a fillet (pl. XXIII C). Both at Harappā and Mohenjo-daro have been found a number of ivory combs and handled copper mirrors

(fig. 1, 2). Amongst ornaments mention may be made of necklaces, bracelets, finger-rings, ear-rings, girdles and anklets.

The population of these cities was cosmopolitan and consisted of a variety of racial types, of which the Proto-Austroloid, Alpine, Mediterranean and Mongoloid have been identified. Consequently, several religious practices seem to have been in vogue. A section of the population worshipped the Mother Goddess, so popular in contemporary western Asia. Adoration of a prototype of Śiva is suggested by the portrayal on some seals of a horned god, in one instance having three faces and surrounded by animals (pl. XXIV, 2). The occurrence of a large number of objects identified by some as *liṅgas* and *yonis* may also point to the same direction. The less enlightened people seem to have worshipped trees, animals and streams. Belief in life after death is hinted at by the burial-customs. With the dead body, which was laid supine in an extended position in the grave-pit, were placed pottery, personal ornaments, toilet-objects and food-provisions—presumably to serve the departed in the next world (pl. XXV A). Of unusual interest was a burial in which the body, wrapped in a reed-shroud, was encased in a wooden coffin. Coffin-burials were common in Sargonid and pre-Sargonid Iraq, and it is not unlikely that the person buried in the wooden coffin at Harappā was a foreigner.

The Harappans lived in a full-fledged Bronze Age, although chert blades still continued in use (pl. XXVI B). Bronze objects for domestic use included knife-blades, saws, sickles, celts, chisels, razors, pins, tweezers, fish-hooks and the like (fig. 1). Spears, axes, arrow-heads and short swords, along with clay missiles, might have been used either in warfare or in ordinary self-defence against wild animals and miscreants. In fact, the paucity of warlike metallic weapons suggests that the people had a comparatively peaceful time. And, indeed, it is for their peace-time achievements that the Harappans are noted. They took pains to produce fine pottery, usually with a red slip and variety of designs painted in black pigment (pl. XXVI A). But what attract greater attention are stone sculptures, bronze figurines and steatite seals. Amongst the sculptures particular mention may be made of a steatite bust of a bearded man from Mohenjo-daro (pl. XXIII A) and a sandstone torso of a nude male with an emphasis on muscles from Harappā (pl. XXIII B). Of the bronze figurines, the most remarkable is that of a dancing girl from Mohenjo-daro (pl. XXIII C). The small steatite seals represent the Harappan craftsman at his best (pl. XXIV, 1-3 and 5). Having a white polished surface, they depict a variety of animal and other designs in intaglio. The Brahmani bull, with a swinging dewlap, pronounced hump and muscular body is indeed a fine piece of art.

That the Indus people were literate is fully borne out by the inscriptions which the seals bear. The script was pictographic, consisting of nearly four hundred symbols. It seems to have been written from the right to the left, boustrophedon style being employed in case of inscriptions of more than one line. Unfortunately, however, one has yet to wait for the day when the script may be deciphered—the discovery of a bilingual seal may be helpful.

The citizens of Harappā and Mohenjo-daro, for obvious reasons, could not have got all the raw material locally; nor could they have their finished products exhausted in the home-market alone. In fact, there is evidence of trade-connexions between the Indus cities and central and south India on the one hand, and Afghanistan, Persia and Iraq on the other. For example, while copper may have been obtained from Khetri in Rājasthān or from Afghanistan, gold seems to have come from Mysore in south India. Lapis lazuli was imported either from Iraq or, nearer home, from Badakhshān in Afghanistan. Jade and turquoise probably found their way respectively from the Pamirs in central Asia and Khorāsān in Persia. As to exports, India seems to have sent out
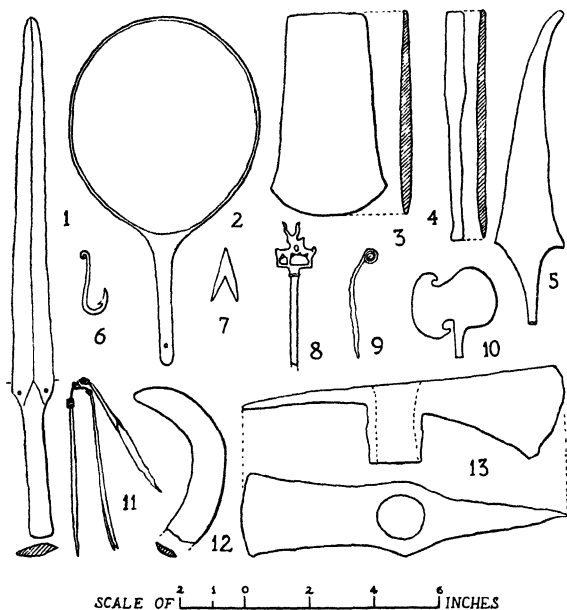
FIG. 1. *Copper and bronze objects from Harappā (5, 8 and 11) and Mohenjo-daro (the rest): 1, dagger; 2, handled mirror; 3, celt; 4, chisel; 5, knife with curved end; 6, fish-hook; 7, arrow-head; 8, animal-headed pin; 9, spiral-headed pin; 10, razor; 11, triform toilet-set; 12, sickle; 13, socketed adze-axe*

cotton goods, spices and other perishable articles to western Asia. The occurrence of several seals of Indian origin at Ur, Lagash, Susa, Tell Asmar, etc., suggests that they were carried by bands of merchants who probably also had a colony in those cities.[1] In fact, in one case, at Umma near Lagash, it has been reported that the seal actually lay on a bale of cloth.

The trade with western Asia seems to have been carried on partly overland, in the fashion of caravan-trade of historical times, and partly along the sea-coast. The type of vessel employed on such coastal voyages is illustrated on a potsherd and a seal from Mohenjo-daro (pl. XXIV, 5).

Weights and measures used during this period are also of interest. Made alternatively of chert, steatite, chalcedony, etc., the weights were generally cubical in shape and were divided into ratios of 1, 2, $\frac{8}{3}$, 8, 16, 32, etc.. to 12,800. For measuring length, a 'foot' of about 13·0 to 13·2 in. and a 'cubit' ranging from 20·3 to 20·8 in. seem to have been in use.

There is no internal evidence to assess the chronological horizon of the Harappā culture. Nor have any radio-carbon tests been carried out on suitable Harappan remains to obtain an approximate date. The only dating source thus lies in the Indus seals, nearly 30 in number, discovered at various sites in Iraq and, conversely, certain objects of probable western origin found at Harappan sites. Of the seals, about a dozen lay in a datable context: two in pre-Sargonid, six in Sargonid and the remainder in later, Larsa-Kassite, levels. Thus the bulk of Indus exports centred round the period of Sargon of Akkad, i.e., 2350 B.C. The occurrence in the lower levels at Mohenjo-daro of a fragmentary vase of chlorite schist incised with 'hut-and-window' pattern would suggest, on Mesopotamian analogy, an Early Dynastic date for those levels but, since the type continued even later, undue stress cannot be laid on the point. Spiral and animal-headed pins, a shaft-hole axe-adze (fig. 1, 8, 9 and 13) and a mace-head, coming from late Harappan levels, indicate the continuance of the culture into the second millennium B.C.[2] Stone has shown by spectrographic analysis that a segmented faïence bead from an upper Harappan level is identical in composition with one from Knossos, ascribable to *circa* 1600 B.C.[3] On the present showing, therefore, a date from *circa* 2500 to 1500 B.C. may be accepted for this great civilization of the Indus valley. Be it added, however, that these figures need not apply *in toto* to all the Harappan settlements; the depth of occupational strata as also the geographical position must be given due allowance in each case.

What brought about the end of these cities has been a matter of debate for long. Floods, drastic climatic changes, economic depression or foreign invasion could have been some of the causes. M. R. Sahni has recently advanced some evidence in support of the flood theory,[4] while Wheeler holds Indra (symbolic of the Aryan invaders) responsible for the destruction of the Harappan cities.[5] As a matter of fact, the evidence in either case is only circumstantial. At Harappā itself a culture represented by two successive burial strata and a few jerry-built walls—Cemetery H culture—overlies the Harappan

[1] C. J. Gadd, 'Seals of ancient Indian style found at Ur', *Proceedings of the British Academy*, XVIII (1932), pp. 3-22.

[2] S. Piggott, 'Notes on certain metal pins and a mace-head in the Harappā culture', *Ancient India*, no. 4 (1947-48), pp. 26-40.

[3] J. F. S. Stone, 'A second fixed point in the chronology of the Harappā culture', *Antiquity*, XXIII (1949), pp. 201-05.

[4] M. R. Sahni, *Man in Evolution* (Calcutta, 1952), pp. 153-54.

[5] Wheeler, *op. cit.* (1947), pp. 81-83.

ruins.[1] While burials of the lower stratum were complete inhumations those of the upper were fractional, i.e., the dead body was first exposed for some time and thereafter a few selected bones and the skull were interred in a pot which was buried in a pit of size (pl. XXV B). The pottery associated with the two strata is on the whole similar, though minor variations do occur. The ware has a bright red slip, and the designs, executed in black, include stars, zigzag lines, fishes, peacocks, etc., besides certain symbolic scenes.

Suggestions have been made[2] that the Cemetery H culture represents the Aryan invaders. Attention may, however, be invited to three important factors which stand in the way of such an assumption. In the first place, there is a clear hiatus between Cemetery H and Harappā cultures: in the cemetery area, a 5 to 7 ft. thick débris-layer intervened between the Harappan Cemetery, R 37, and the lower stratum of Cemetery H itself; in the habitation-area the rickety walls associable with Cemetery H culture were separated from those of the Harappā culture by a deposit of not less than 4 ft. in thickness.[3] Thus, in the absence of any overlap between the two cultures, it is difficult to imagine how the Cemetery H people could be treated as invaders when the 'invaded' were non-existing. The second point is ethnographic. It is generally believed that the bearers of the Indo-Aryan culture were the 'Northern Steppe folk', characterized by a long massive head, arched forehead, narrow, high-bridged nose and strong chin.[4] It is a pity that a full report on the skeletal remains of Cemetery H has not been published so far, but from whatever information is available it is seen that while the Proto-Austroloids and Armenoids were represented, the Northern Steppe folk were absent. The third factor relates to the distribution of the Cemetery H ware. Except two sites, in Bahāwalpur, the ware is not reported from elsewhere. True, this limited distribution may partly be due to insufficient exploration, but had it been an 'Aryan' ware one should expect it in the Ghaggar (ancient Sarasvatī), Sutlej and upper Gangā valleys, where, according to their own literature, the early Aryans resided. Ghosh's explorations in the Ghaggar valley in Bikaner and those by the present writer in the upper Sutlej and Gangā valleys have not yielded any Cemetery H ware in these regions

The other outstanding post-Harappā cultures in the Indus valley and Baluchistan are those represented by Rānā Ghundai IV and V, a cemetery at Shāhī Tump, the second and third occupational periods at Chanhu-daro (Jhūkar and Jhāngar cultures), the burials at Moghul Ghundai, Jīwanrī and Zangiān and the Londo ware.

The end of Rānā Ghundai III is marked with 'a great conflagration', which might mean a sudden sacking and burning of the habitation by some intruders. Such an assumption is also warranted by a complete change in the ceramic industry of the succeeding occupation, RG IV, when large open bowls of coarse grey ware with crude foliage-designs in black to purplish-red colour replaced the more sophisticated bichrome pottery of RG III. RG V brought in again a new set of people, whose pottery was not painted but instead bore embossed designs including 'cowry-shell', 'wheat-ear', etc.[5]

The Shāhī Tump cemetery was dug into the ruins of an earlier settlement belonging to the Kulli-Mehī culture. The burials were complete inhumations, the body being placed on one side with legs flexed. Associated with the burials were: a large number of pots of grey to yellowish-buff ware, painted over in black or reddish brown pigment with

[1] Wheeler, *op. cit.*, pp. 89 ff.; Vats, *op. cit.* (1940), pp. 203 ff.
[2] Cf. Wheeler, *op. cit.*, p. 82.
[3] Wheeler, *op. cit.*, (1947), pls. XXXII and XXXIX.
[4] B. S. Guha, *Racial Elements in the Population* (Oxford Pamphlets on Indian Affairs, 1944).
[5] Ross, *op. cit.*
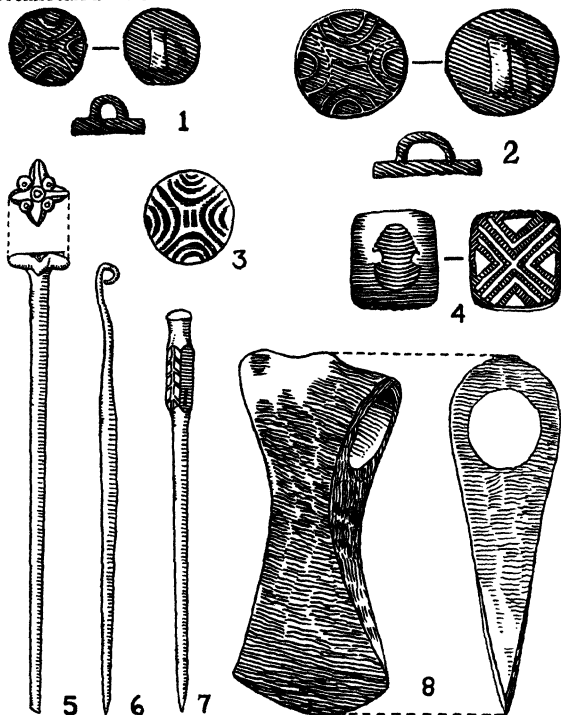
FIG. 2. *1 and 2, compartmented stamp-seals of copper from Shāhi Tump. 3-8, from Jhukar levels at Chanhu-daro: 3 and 4, compartmented seals; 5-7, copper pins; 8, copper shaft-hole axe*

designs like festooned bands, hachured triangles, angular spirals, *svastikas*, etc.; one each of shaft-hole axe and spear-head of copper; 'compartmented' seals, also of copper, provided with strap-handles (fig. 2); besides beads of agate, ruby, lapis lazuli, etc. The pottery seems to have a genetic relationship with that of Susa I, though the closest parallels come from Khurab in Persia.[1] The shaft-hole axe is comparable with those from Maikop and Tsarskaya in south Russia, while the seals have their counterparts in Hissar II B, and Anau III.[2] Both the axe and seals have thus a western origin, and their occurrence at Shāhī Tump suggests an eastward movement of some people in the first half of the second millennium B.C.
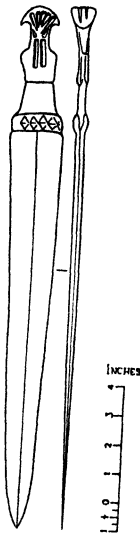
Fig. 3. *Bronze sword from Fort Munro*

The Jhūkar and Jhāngar cultures occur in succession above the Harappan remains at Chanhu-daro.[3] The former is distinguished by its buff or cream-coloured pottery with designs executed in purplish black or red pigments. Amongst other objects of the period mention may be made of a shaft-hole axe of bronze and compartmented seals of faïence or pottery, both recalling the Shāhī Tump specimens. In addition, there were copper or bronze pins with decorated heads (fig. 2). The Jhāngar ware was grey or black, bearing incised patterns like chevrons, hatched triangles, etc. No other associated objects are known, which makes it difficult to guess the date of the ware.

As already stated, RG IV, the Shāhī Tump and Jhūkar cultures mark a distinct change from the preceding Harappā culture. Since quite a few of the artefacts in these cultures have their counterparts in Iran, it is only reasonable to suppose that they were brought along by people coming from that area; had the artefacts been mere imports, one would not expect a change in other cultural constituents as well. In western Asia there is evidence of a great upheaval and folk-movement about this time (first half of the second millennium B.C.), resulting largely from the inroads of barbaric tribes from the north. Perhaps the influx of people at Shāhī Tump, Jhūkar, RG IV, etc., has also to be viewed in that context.

Fig. 4. *Trunnion celt from Shalozon.* ½

The burial-cairns at Moghul Ghundai[4] have yielded horse-bells, rings, bangles and a tripod jar which are reminiscent of Cemetery B at Sialk.[5] This

[1] A. Stein, *Archaeological Reconnaissances in North-west India and South-east Iran* (London, 1937), pp. 118 ff.

[2] E. F. Schmidt, *Excavations at Tepe Hissar, Damghan* (Philadelphia, 1937), pl. XXVII; C. A. F. Schaeffer, *Stratigraphie Comparée et Chronologie de l'Asie occidentale* (London, 1948).

[3] Mackay, *op. cit.* (1943), pp. 103 ff.

[4] Stein, *op. cit.* (1929), pp. 41 ff.

[5] R. Ghirshman, *Fouilles de Sialk*, II (Paris, 1939), pls XXIV etc.

would place the Moghul Ghundai cairns in the last quarter of the second millennium B.C. To the same period may be assigned the cemeteries at Zangiān and Jīwanrī,[1] as also the Londo ware.[2]

Amongst the isolated post-Harappan objects in the north-west, attention may be drawn to a bronze sword from Fort Munro (fig. 3) and a trunnion celt from Shalozan (fig. 4). The former, with its typical fan-like hilt, recalls swords from Talish in Caucasia and Luristan in Persia.[3] The celt too has parallels at several sites in Europe and western Asia. Both the objects thus again indicate an influx of people from across the Hindukush, this time in the second half of the second millennium B.C.

2. THE UPPER GANGĀ BASIN

The story in the Gangā valley is different from that of the Indus. As known today, the earliest culture in the upper part of this valley is represented by copper implements comprising celts, both ordinary and shouldered, harpoons, hatchets, swords with antennae hilt, hooked spear-heads, besides certain other objects of that metal, e.g., 'anthropomorphic' figures and 'rings', the use of which is indefinite (fig. 5; pls. XXX and XXXI). Some of the sites in the valley which have yielded tools of this class are Rājpur Parsu, Fatehgarh, Biṭhūr, Pariar, Bisaulī, Sarthaulī, Sheorājpur and Bahādarābād, the last-named having been discovered as late as 1951 (pl. XXXI). However, the upper Gangā basin, which more or less co-extends with the State of Uttar Pradesh, is not the only area where such artefacts occur, for they have also been discovered at Ponḍī in Vindhya Pradesh, Gungeriā in Madhya Pradesh (where as many as four hundred and twentyfour implements were found in a hoard), Kallūr in Hyderabad, Hāmī, Bargunḍā, Kaushayā, etc., in Bihar, Tamājurī in West Bengal and Dunriā, Bhagrāpīr, etc., in Orissa.[4] It will thus be seen that this 'Copper Hoard culture' spread over a considerably large area in northern, eastern, central and a part of southern India, an extent in no way less than that of the Harappā culture in the north-west—from Bahādarābād to Kallūr the distance is roughly 1,000 miles, while from these two places to Tamājurī it is nearly 750 and 800 miles respectively.

Ever since the publication of the first hoard in 1822 antiquaries have been conscious of the existence of a 'Copper Age' in this part of the country. But their main interest lay in collecting and describing the tools, without any marked attempt at assessing their chronological horizon or cultural affiliations. Notable amongst such efforts were those by V. A. Smith, Hirananda Shastri, J. Coggin Brown and S. C. Roy.[5] In 1936, however, R. Heine Geldern came out with a suggestion that the hoards represented 'archaeological

[1] Stein, *op. cit.* (1931), pp. 77 ff.

[2] de Cardi, *op. cit.* (1951).

[3] Schaeffer, *op. cit.*, figs. 217 ff.

[4] B. B. Lal, 'Further Copper Hoards from the Gangetic basin and a review of the problem', *Ancient India*, no. 7 (1951), pp. 20-39.

[5] Smith, *op. cit.*; also 'The Copper Age and prehistoric bronze implements of India -Supplement', *Indian Antiquary*, XXXVI (1907), pp. 53-55; Hirananda Shastri, 'Recent additions to our knowledge of the Copper Age antiquities of the Indian Empire', *Jour. Asiatic Soc. Bengal*, XI N.S. (1915), pp. 1-6; J. Coggin Brown, 'Note on a copper celt found in the Palamau District' and 'Note on two copper axes', *Jour. Bihar and Orissa Res. Soc.*, I (1915), pp. 125-28; S. C. Roy, 'Relics of the Copper Age found in Chhota Nagpur', *ibid.*, II, pp. 481-84.
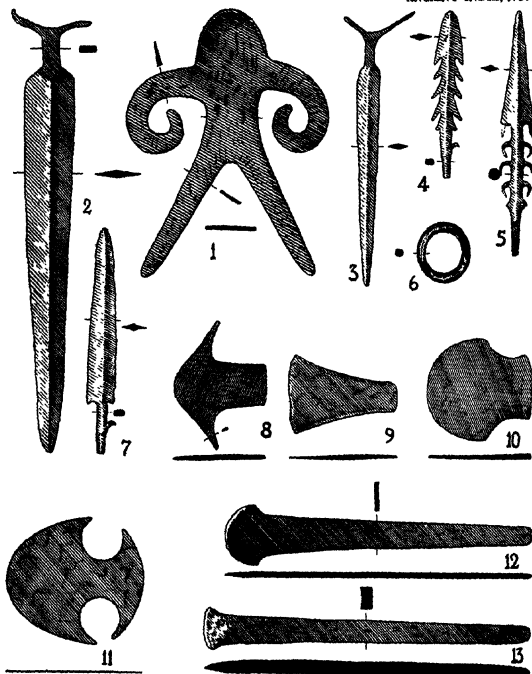
FIG. 5. *Implements and other objects from Copper Hoard sites: 1, 'anthropomorphic' figure from Sheorājpur; 2 and 3, antennae sword from Fatehgarh; 4 and 5, harpoons respectively from Sarthaulī and Bisaulī; 6, ring from Paṇḍi; 7, hooked spear-head from Sarthaulī; 8, hatchet (paraśu) from Sarthaulī; 9, celt from Gungeriā; 10, shouldered celt from Dunriā; 11, double-edged axe from Bhagrā Pīr; 12 and 13, bar-celts from Gungeriā*

traces of the Vedic Aryans'.[1] In this attempt he was supported by Stuart Piggott,[2] who, however, later on thought that it was not the Aryans but Harappan refugees, moving eastwards, who were responsible for the tools.[3] Their conclusions were based essentially on a typological study of the tools. However, there was an initial trouble with the data they used, for they assumed that the trunnion celt from Shalozan, 'fan'-hilted sword from Fort Munro, socketed axe from Shāhī Tump and axe-adze from Mohenjo-daro (figs. 1-4) formed a part and parcel of the 'Copper Hoards', and since the former tools could be linked up with their counterparts in western Asia, ascribable to the second half of the second millennium B.C., the Copper Hoards should also be treated likewise. The position has since been clarified by the present writer,[4] and Professors Childe, Piggott, Wheeler and Haimendorf have agreed (in correspondence) that the Hoards need no longer be associated with the Aryans.

During 1949 the writer carried out trial-excavations at two of the Copper Hoard sites, viz. Rājpur Parsu and Bisaulī. Though no fresh implements were encountered, fragments of an ill-fired ochre-coloured pottery were met with in the lowest levels of the sites. It was felt that this pottery was likely to have been associated with the tools that had been discovered earlier at the sites. This presumption gains support from the fact that in the 1952-excavation at Bahādarābād, Y. D. Sharma came across this class of pottery, though its direct association with the copper implements, recovered earlier by the canal-diggers, was not established. In 1951-52 the present writer found fragments of a similar ware in the lowest levels at Hastināpura, District Meerut, Uttar Pradesh well-stratified below another class of pottery known as the Painted Grey Ware. Since the Painted Grey Ware period at Hastināpura is likely to have begun in *circa* 1100 B.C. and as there was a break of occupation between the levels of the Ochre-coloured and Painted Grey Wares, the former may well antedate 1200 B.C. As to the beginning of this culture, there is no concrete evidence available at present. It appears, however, that it had an early start, maybe before the middle of the second millennium B.C.

Who were the authors of this culture? If the Hoards were associated with the Ochre-coloured Ware, of which there is every likelihood, though an unimpeachable proof has yet to come, it would follow that the authors of the Hoards occupied the Gangā valley before the arrival of the people using the Painted Grey Ware. As discussed below (p. 97), there is circumstantial evidence to associate the Painted Grey Ware industry with the Aryans. In that case, the Copper Hoard people would be the earlier inhabitants of the Gangā valley whom the Aryans encountered on their arrival there.

The next cultural phase in the valley is represented by the Painted Grey Ware, which occurs in a well-stratified sequence at Hastināpura.[5] The excavation, carried out during the years 1950-52, revealed five occupational Periods at Hastināpura (pl. XXXII), with a clear-cut break in between them all (fig. 6). From bottom upwards, Period I was characterized by the occurrence of the Ochre-coloured Ware, referred to above. The

[1] R. Heine Geldern, 'Archaeological traces of the Vedic Aryans', *Jour. Ind. Soc. Oriental Art*, IV (1936), pp. 87-115; 'New light on the Aryan migration to India', *Bulletin American Inst. for Iranian Art and Archaeology*, V (1937), pp. 7-16.

[2] S. Piggott, 'Prehistoric Copper Hoards in the Ganges basin', *Antiquity*, XVIII (1944), pp. 173-82.

[3] Piggott, *op. cit.* (1950), p. 238.

[4] Lal, *op. cit.* (1951).

[5] The report on the excavation at Hastināpura will be published in the next number of *Ancient India*. A summary of the results was published by the author in *Illustrated London News*, Oct. 4 1952, pp. 551-53.

SCHEMATIC SECTION ACROSS HASTINĀPURA MOUND 1950-52
EAST
WEST
V (LATE 11TH-EARLY 15TH CENT. A.D.)
COIN OF BALBAN (A.D. 1266-87)
EARLY MEDIAEVAL WARE
IV (EARLY 2ND CENT. B.C.-END OF 3RD CENT. A.D.)
YAUDHEYA COINS (1ST CENT. A.D.)
IMITATION COINS OF VĀSUDEVA (MID.-3RD CENT. A.D.)
MATHURĀ COINS (2ND CENT. B.C.)
'SUṄGA' TERRACOTTAS
III (EARLY 6TH-EARLY 3RD CENT. B.C.)
NORTHERN BLACK POLISHED WARE
PUNCH-MARKED COINS
BURNT EARTH
EROSION LINE
II (C. 1100-C. 800 B.C.) PAINTED GREY WARE
I (PRE-1200 B.C.) 'OCHRE-COLOURED' WARE
NATURAL CLAY
SAND
CLAY
SAND
CLAY
450 Ft.
200 Ft. OMITTED
KHĀDAR LEVEL
SILTED CLAY
SAND
POTSHERDS & BRICK-BATS
RIVER GRAVEL

Fig. 6

principal ceramic industry of Period II was the Painted Grey Ware—bowls and dishes of fine-grained grey fabric, painted over in black pigment with designs including simple bands, groups of vertical, oblique and criss-cross lines, sigmas, *svastikas*, chain of short spirals, rows of dots and dashes and concentric circles, semicircles, etc. Alongside it there also occurred a black-slipped ware, which, though not having the lustre of the Northern Black Polished Ware, may have been its forerunner. Within the limited area excavated, no definite plans of houses were obtained, but walls of mud and mud-bricks were duly encountered. The discovery of mud-plaster with prominent reed-marks suggested that some of the houses had reed-walls plastered over with mud. Agriculture and cattle-breeding seem to have been the main occupation of the people. In a pit of this Period were found charred grains identified as rice. To the dietary were also added mutton, beef and pork, as suggested by the occurrence of charred bones with sharp cut-marks of the sheep, goat, cattle, buffalo and pig. Mention may also be made of the presence of the horse (*Equus caballus*) during this Period—a fact which is also corroborated by a terracotta representation of the animal. The people used copper as the chief metal, as is borne out by the discovery of one each of an arrow-head, nail-parer, borer (?) and antimony rod (fig. 7), besides a few other objects of indeterminate shape. Iron slag occurred in the latest levels of the Period, but no artefacts were found. Amongst other small finds of the Period mention may be made of cylindrical weights of chert and jasper, bangles of bone and glass, terracotta game-counters, a whetstone of slate and beads of carnelian, jasper, etc., besides pointed tools of bone which are commonly supposed to have been styli used for writing but could have as well been used for weaving. The occupation came to an end because of a heavy flood in the Gangā which washed away a considerable portion of the settlement. Signs of this devastation are left on the mound in the form of an erosional scar (pl. XXXIII). More than that, the washed material was recovered from borings in the ancient bed of the Gangā (which now flows a bit away from the mound) at a depth of nearly 45 to 50 ft. below the subsoil water-level (fig. 6).

FIG. 7. *Copper objects from Period II of Hastināpura: 1, borer (?); 2, arrow-head; 3, nail-parer; 4, antimony rod.* ⅘

As time passed, people re-occupied the site for the third time. They had now completely given up painting the grey ware, which, however, was continued in a much coarser fabric. In addition to the earlier forms, viz. dishes and bowls, several fresh types came into being. The ordinary black-slipped ware was ousted by the Northern Black Polished Ware (see below, p. 119). Houses of this Period were built of mud-bricks as well as burnt bricks. Soakage jars and brick drains were used for draining out refuse water, while terracotta ring-wells may have been used both as wells and drainage pits. In addition to copper, iron had come into use, of which an arrow-head, a chisel, a sickle and several nails were obtained. The Period witnessed another improvement, viz. the

introduction of a system of coinage—punch-marked coins of copper and silver and uninscribed cast coins of the former metal. The Period came to an end because of a large-scale fire, traces of which are available throughout the site.

The subsequent history of Hastināpura is given below (p. 140). It will suffice to say here that the fourth occupation began early in the second century B.C., as indicated by the presence of the coins of kings of Mathurā and 'Śuṅga' terracottas. Since Period IV commenced early in the second century B.C. and there was a break of occupation between this and Period III, the latter may be supposed to have ended some time in the first half of the third century B.C. The thickness of occupational strata of Period III ranged from 5 to 9 ft., and a maximum of six floor-levels was noted. The beginning of the Period may thus be placed early in the sixth century B.C. Such a dating is also supported by the presence of the Northern Black Polished Ware throughout this Period.

As stated above (p. 95), a heavy flood in the Gangā brought about the end of Period II, and the site was deserted for some time to come. Period III brought in several marked changes, e.g., the disappearance of painting on the grey ware, replacement of ordinary black-slipped ware by the Northern Black Polished Ware, introduction of iron and coinage, etc.—facts which indicate that the interval between Periods II and III must have been sufficiently long. It is unlikely, therefore, that the flood could have occurred later than the beginning of the eighth century B.C. With this as the upper limit for the end of Period II, and with 7 ft. of regular occupational strata, the beginning of the Period is anybody's guess. However, in the general context of the site three centuries may be considered a fairly moderate estimate for the accumulation of the strata. Thus, the Painted Grey Ware occupation at Hastināpura may be deemed to have commenced at the beginning of the eleventh century B.C., with a margin, if any, on the earlier side. As to an absolute date for it, there is no further evidence.

During explorations in the upper Gangā and Sutlej basins the writer discovered the Painted Grey Ware at over thirty other sites; the more important amongst these are Pānīpat (pl. XXXIV A), Tilpat, Pehowā, Rājā Karan kā Qilā, Mathurā, Kurukshetra, Indrapat, Kampil, Barnāwā, Chhat, Bāghpat, Amīn, Rupar and Koṭlā Nihang, some of which are associated with the story of the *Mahābhārata*.[1] To this list may be added Ahichchhatrā, where the ware was found (pl. XXXIV B) during 1940-44 excavations, in which 'the priority of the painted to the black polished sherds' was 'regarded as probable rather than proved'.[2] In the Ghaggar valley, Ghosh has discovered another twenty sites yielding this class of pottery (pl. XXXV A) associated with a mass of other pottery (pl. XXXV B), Sūratgarh, Chak 86, Reṛ (pl. LXXII) and Jetsar being a few amongst them.[3]

Wherever exposed sections permitted a reasonable study, e.g. at Pānīpat, Chhat, Tilpat, etc., it was observed that the Painted Grey Ware well preceded the N.B.P. Ware. Further, at Koṭlā Nihang the ware was found strewn over the deserted ruins of the Harappan settlement, indicating a possible time-lag between the two cultures. At Rupar, the writer picked up both Harappā and Painted Grey Wares, and the recent excavation of the site, while confirming the existence of full-blooded Harappā and Painted Grey Ware cultures at the place (pl. XXIX), has also established the absence of an overlap between the two. In the Ghaggar valley Ghosh observed that the 'Painted Grey Ware people came to the area later than its desertion by the Harappans' (*circa* 1500 B.C.) and that

[1] B. B. Lal, 'The Painted Grey Ware of the upper Gangetic basin: an approach to the problems of the Dark Age', *Jour. Roy. Asiatic Soc. Bengal* (Letters), XVI N.S. (1950), pp. 89-102.

[2] *Ancient India*, no. 1 (1946), p. 59.

[3] Ghosh, *op. cit.*

'they were fond of breaking new grounds for themselves'.[1] It is indeed difficult to assess the duration of this gap, but if a guess is to be hazarded, based partly on the dating of the Painted Grey Ware at Hastināpura and partly on the consideration that the Ware is likely to have moved from west to east, it would seem that the authors of this ware made their appearance in the Ghaggar valley round about 1200 B.C.

To attempt an interpretation of the archaeological data at one's disposal in terms of ethnical movements and literary traditions is the greatest risk one can ever run. Hence, whatever is said in the following few paragraphs should be taken to be highly provisional.

It has been stated above (p. 96) that many of the sites containing the Painted Grey Ware, e.g. Hastināpura, Ahichchhatrā, Kampil, Barnāwā, Pānīpat, Bāghpat, Tilpat, Mathurā, etc., are associated with the story of the *Mahābhārata*. The date of the Mahābhārata war has been suggested by Pargiter,[2] on probable grounds, to be *circa* 950 B.C., which falls well within the Painted Grey Ware period at Hastināpura. It would seem, therefore, that the Ware was associated with the early settlers at these sites, viz. the Pauravas, Pāñchālas, etc., who formed a part of the Aryan stock in India.

While philological data have established the one-time existence of an Indo-European family, of which the Hellenic Greeks, Iranians, Indo-Aryans, etc., were subsequent branches, archaeological evidence is still in a state of infancy in this respect. The Boghaz Küi inscription, however, clearly mentions the names of Vedic gods like Indra, Varuṇa, Mitra, etc., suggesting thereby that the ancestors of the Indo-Aryans had made their appearance in western Asia by the fourteenth century B.C. Thus, they are likely to have reached India in the couple of centuries that followed. And here it should be recalled that in the Sarasvatī valley, which, according to Vedic literature, had been occupied by the Aryans prior to their spread in the upper Gangā basin, the only culture that can be dated to the last quarter of the second millennium B.C. is, as far as our knowledge goes at present, that represented by the Painted Grey Ware. The writer has also identified sherds of the Painted Grey Ware in a collection from Sīstān made by Stein several years ago. As regards Baluchistan and the Indus valley, no exploration has been done with this end in view, but there is a likelihood of the Ware being present in those areas. It may, however, be emphasized that the evidence suggesting the association of the Ware with the early Aryans in India is entirely of a circumstantial kind.

3. EASTERN INDIA

The earliest culture in eastern India falling within the chronological span under consideration (viz. from *circa* 4000 B.C. to the beginning of the early historical times) is probably a mesolithic one or some sort of a survival thereof. This is suggested by the occurrence of non-geometric microliths in geological deposits in the eastern fringes of the Chota Nagpur plateau, recently explored by the author.

The next stage is that represented by polished stone axes at sites like Ban Āshuriā and Jāshpur, Baidyapur, Daspallā, etc. in Orissa. The writer has recently made a detailed study of these axes and has explored several of the sites. He feels that the Eastern Stone Axe culture should be distinguished from the Southern, some of the reasons for this being as follows. A very prominent characteristic of the Eastern axes is their straight sides

[1] Ghosh, *op. cit.*, pp. 41-42.
[2] F. E. Pargiter, *Ancient Indian Historical Tradition* (London, 1922), pp. 179 ff.

whereby a trapezoidal or rectangular transverse section is produced. This is a feature rare, if it at all exists, in the Southern series. Conversely, the oval or lenticular section typical of the Southern series is markedly absent from the Eastern specimens. Again, the technique of flaking differs in the two cases. And lastly, in the Eastern series there occurs the 'shouldered' type which is practically non-existing in the South. These differences are further heightened by the difference in the associated pottery. During surface-explorations the writer collected a coarse brown ware from at least half-a-dozen Eastern stone axe sites and, although a direct proof of the association of the axes with the ware must await an excavation, chances are that the two go together since all the sites appear to have only one occupational period. This ware is basically different from the burnished grey ware associated with the Southern series. The Eastern axes have their counterparts in Burma, Malaya, Indo-China (Late Hoabinhian and Bacsonian cultures) and southern China, and it is most likely that they were introduced into India from that region.[1] The probable date of the influx may have been some time in the first half of the second millennium B.C., though some of the more advanced types (e.g. the shouldered one) may be regarded much later.

The Stone Axe culture seems to have been followed by that of the Copper Hoards, with an appreciable overlap between the two. Indications of the overlap come from the occurrence of certain celt-types both in metal and stone: for example, the bar-celt (pl. XXXVI); the shouldered celt, of which a (non-rectangular) curvilinear variety also exists in stone; and the celt with incurved sides and splayed-out cutting edge. Amongst the more important Copper Hoard sites in eastern India mention may be made of Hāmī, Bargunḍā, Tamājurī, Bhagrāpīr and Dunriā. But since no adequate exploration has been done at these sites, it is difficult to say what other artefacts and pottery went with the tools. Nor is it possible to guess how late the culture survived in these areas. The only fixed point in the archaeology of eastern India is the appearance of the Northern Black Polished Ware, which, at Rājgir and Vaiśālī (Bihar), may go back to the sixth century B.C. but may have reached Tamluk (West Bengal) somewhat later.

4. CENTRAL AND WESTERN INDIA

Except for a few stray finds like a bronze celt from Jabalpur, copper hoards from Gungeriā and a Babylonian seal (pl. XXIV, 4) in the Nagpur Museum, practically nothing was known about the protohistory of central India until recent years, when the efforts of H. D. Sankalia, B. Subbarao, M. G. Dikshit, S. B. Deo, M. N. Deshpande, A. V. Pandya and V. S. Wakankar revealed that the upper Chambal and Narmadā valleys and northern Deccan were extensively occupied during chalcolithic times. To illustrate the culture-sequence in this region, it is proposed first to summarize the results of recent excavations at Maheśwar on the northern bank of the Narmadā, carried out by Sankalia and Subbarao (information kindly supplied by them).

The earliest human artefacts at the site consisted of small-to-medium-sized scrapers of chert, jasper, etc., made mostly on flakes with faceted platform and irregular but sometimes fluted cores. They lay in the black cotton soil without any associated pottery. The industry may perhaps be termed as 'proto-microlithic', specially in view of the fluted cores.

Overlying these tools, but with a distinct break in between, was a chalcolithic culture comprising plain and painted pottery, an advanced microlithic industry, mace-

[1] E. C. Worman Jr., 'The neolithic problem in the prehistory of India', *Jour. Washington Academy of Sciences*, 39 (1949), pp. 181-201.

heads, sling-stones, querns, copper pins, chisels and hooks, besides beads of agate, carnelian, faïence, steatite, etc. The pottery was predominantly red, with its various shades, and a fair percentage of it was painted. The designs, executed usually in black, included oblique or vertical parallel lines, hatched triangles, circles, foliage, dancing human figures and antelope. The types included carinated bowls, dishes-with-stand, spouted vessels, etc. Alongside the red ware, but in a much smaller quantity, there also occurred an ochre-coloured ware. The microliths included backed blades, lunates, points, etc.[1]

In the layers that followed were obtained the Northern Black Polished Ware, black-and-red ware, punch-marked coins and iron implements. Whether there was an overlap between the end of the chalcolithic culture and the appearance of the Northern Black Polished Ware is not yet clear at Maheśwar, but it is evident that the former culture well preceded the latter ware. However, Sankalia's own excavation at Nāsik and that of M. G. Dikshit at Tripurī showed that there was no such overlap. Similar was the case at Bahal, excavated by M. N. Deshpande. Amongst other notable sites yielding chalcolithic material mention may be made of Jorwe (where several copper celts have been found[2], pl. XI), Nāgdā, Ujjain, and Nāvḍā Ṭoli.
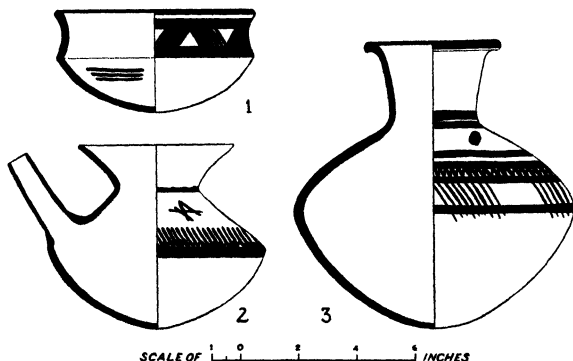
FIG. 8. *Painted pottery, black-on-red, from Jorwe* (courtesy H. D. Sankalia)

[1] It may be worth while to investigate what relationship, if any, exists between this microlithic industry and the one represented at Jabalpur, Hoshangābād, Pachmarhī, etc. (D. H. Gordon, 'The stone industries of the Holocene in India and Pakistan', *Ancient India*, no. 6 (1950), pp. 64-90). In a wider context one may also do well to enquire into the position of the 'coastal' vis-à-vis the 'inland' series. K. R. U. Todd's recent article 'The microlithic industries of Bombay', *Ancient India*, no. 6, pp. 4-16, is enlightening in this respect.

[2] H. D. Sankalia, 'Ancient and prehistoric Maharashtra', *Jour. Bombay Branch Roy. Asiatic Soc.*, XXVII, pt. i (1951), pp. 99-106.

As the study of the chalcolithic material from these areas is still in a preliminary stage, it is difficult to say if it is one and the same culture that is represented at all the sites (the total of which has gone above thirty), or there are regional and chronological subdivisions as well. One may, however, note certain links in between the sites. For example, painted spouts and carinated bowls (cf. fig. 8) are common to Jorwe, Nāsik and Maheśwar. Again, the antelope-motif occurs at Rangpur[1] (the lower levels of which have Harappan affinities, cf. pl. XVI), Maheśwar and in the Chambal valley (fig. 9).
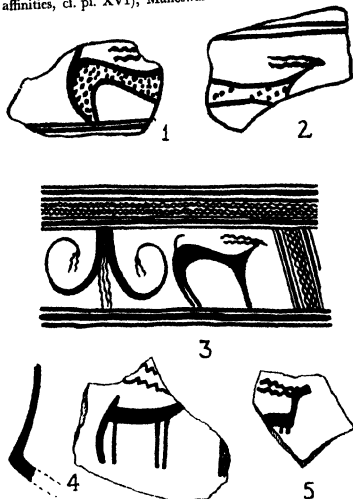
FIG. 9. *Motifs on painted pottery, black-on-red, from: 1-3, Chambal valley* (courtesy V. S. Wakankar); *4 and 5, Rangpur* (after Ghurye and Vats)

There is evidence of contacts with regions outside central India as well. For instance, the ochre-coloured ware from Maheśwar, Nāsik, etc., has a resemblance in fabric to its counterpart at Hastināpura, Rājpur Parsu, etc., though a typological comparison

[1] M. G. Dikshit, 'Excavations at Rangpur: 1947', *Bulletin Deccan College Res. Inst.*, XI, no. 1 (1950), pp. 3-55; Vats, *op. cit.* (1937); G. S. Ghurye in *Jour. Univ. Bombay*, VIII N.S. (1939), pp. 3-11.

has yet to be made to establish the identity. Looking beyond the frontiers of India, the stippling on the body of the antelope (fig. 9) is reminiscent of a similar method adopted to fill up the animal-figures in Hissar IC, Sialk III6 and Giyan VD. The flying hair of dancing figures brings to the mind a roughly similar style on the Samarra ware. It is, however, quite premature to make any further comments on these similarities. But attention here may be drawn to the cylinder seal in the Nagpur Museum (pl. XXIV, 4), the exact provenance of which is not recorded but which seems to have come from somewhere in central India. L. W. King, who deciphered the inscription, wrote: 'The scene engraved on the seal represents a goddess with hands raised in adoration before the weather-god Adad or his West-Semitic equivalent Amurru. The inscription gives the owner's name and reads " Libur-beli, servant of . . . ".' The seal dates from about 2000 B.C., the period of the First Dynasty of Babylon.'[1] As is well-known, Hammurabi's régime (1792-1750 B.C.) witnessed an increase in commercial and other activities; and it is not improbable that the Nagpur seal represents some such contacts with Babylonia—contacts which are reflected in later Indian literature, e.g., the *Bāveru Jātaka* (Bāveru = Babylonia).

5. SOUTH INDIA

The presence of a mesolithic industry in the early part of the Holocene is attested to by the tools found in the *teris* (red sand-dunes) of Tinnevelly District, Madras,[2] and in geological deposits in the Krishṇā and lower Godāvarī basins.[3] The next identifiable culture is that represented by polished stone axes. Wheeler's excavation at Brahmagiri[4] revealed that the earliest inhabitants of the place used, as their principal tools, polished stone axes with pointed butt and oval section, which were supplemented by microliths and a limited amount of copper and bronze. They lived in huts with rubble foundation and produced mainly a burnished grey ware, though there also occurred a few sherds of painted red ware in the lower levels. While disposing of the dead, inhumation was the form for adults and urn-burial for infants. This Polished Stone Axe culture was found to overlap, towards its end, with a megalithic culture (below, p. 107), which, in turn, was overtaken by the Āndhra culture of the first-second centuries A.D. The excavator assigned to the Polished Stone Axe culture a date between *circa* 1000 and third century B.C.

As already pointed out (p. 98), the Southern Stone Axe culture is essentially different from the Eastern. Now, while the latter can be derived from a common south-east Asian source, the same cannot be said with certainty about the former. It is also likely that there may be a western origin in this case or the culture may have developed even locally. At Sangankallu Subbarao came across certain stages demonstrably earlier than that represented at Brahmagiri.[5] Thus, while Sangankallu Phase II, Sub-period 2 was equivalent to Brahmagiri Period I (A and B inclusive), Sangankallu II, Sub-period 1, characterized by fresh stone axes, a fine microlithic industry and pale-grey

[1] M. A. Suboor, 'A Note on a Babylonian seal in the Central Museum, Nagpur', *Jour. Asiatic Soc. Bengal*, X N.S. (1914), pp. 461-63.

[2] A. Aiyappan, 'Mesolithic artefacts from Sawyerpuram in Tinnevelly District, S. India', *Spolia Zeylanica*, 24, pt. 2 (1945), pp. 145-54.

[3] L. A. Cammiade and M. C. Burkitt, 'Fresh light on the Stone Ages in S. E. India', *Antiquity*, IV (1930), pp. 327-39.

[4] R. E. M. Wheeler, 'Brahmagiri and Chandravalli (1947): megalithic and other cultures in the Chitaldrug District, Mysore State', *Ancient India*, no. 4, pp. 180-310.

[5] B. Subbarao, *Stone Age Cultures of Bellary* (Poona, 1948).

ware, was decidedly earlier. The excavator is inclined to call it 'True Neolithic'. Underlying the above and separated from it by a sterile deposit was Sangankallu Phase I, which contained heavily patinated flakes, crude microliths and perhaps no pottery. Since the lower levels of Brahmagiri I and derivatively of Sangankallu II,2 are ascribable to '1000 B.C. or beyond', Phases II,1 and I at Sangankallu must be much earlier, specially the latter in view of the intervening sterile deposit.

Here it may be worth while to clarify one more point. The painted red ware occurred only in Sangankallu II,2 and not below, while the burnished grey ware started from II, 1. It appears, therefore, that the painted pottery reached the scene at a late stage, possibly through an extraneous influence. Besides Brahmagiri and Sangankallu, Kallūr and Maski have also yielded similar painted pottery. As we have seen (above, p. 98), a chalcolithic culture having a kind of painted red ware was already in existence in central India and northern Deccan about the middle of the second millennium B.C. Could it then be that an off-shoot of this chalcolithic culture penetrated further south, reaching Kallūr Maski, etc. in course of time? In this connexion attention may also be drawn to the occurrence of a terracotta cylinder seal at Maski,[1] which, though uninscribed, has certain similarities with its counterparts in Babylonia.[2]

[1] *An. Rep. Arch. Deptt. Nizam's Dominions*, 1936-37 (Calcutta, 1939), pl. XIIIa

[2] B. B. Lal, 'Chalcolithic phase in south Indian prehistory', *Jour. Roy. Asiatic Soc. Bengal (Letters)*, XV N. S. (1949), pp. 41-44; W. H. Ward, *The Seal Cylinders of Western Asia* (Washington, 1910).

SURVEY OF SOUTH INDIAN MEGALITHS

By K. R. Srinivasan and N. R. Banerjee

CONTENTS

1. INTRODUCTION

ONE of the problems with which Indian archaeology is concerned today is the problem of the megaliths of south India, which represent the largest number of extant relics of the protohistoric period of Indian culture—wide alike in their distribution and variety. Apart from a preliminary ground-survey with a view to locating all the monuments and their classification according to typological features, the much bigger tasks of excavating the representative types, preferably in association with the contemporary

habitations, if any, and arriving at definite conclusions as regards their date and their authors, the probable source of their origin and their relationship with the later historic cultures, of which we have more definite knowledge, await completion.

2. PREVIOUS WORK

The occurrence of megalithic monuments and urn-burials in south India has been noticed from time to time by scholars as well as laymen for well over a century. Thus, writing in 1872, James Fergusson dealt in detail with south Indian megaliths in his *Rude Stone Monuments in all Countries.*[1] The diggings made by Jagor of Berlin in 1876 at the famous urn-burial site of Ādichanallūr in Tinnevelly District[2], offered no small impetus for the further excavation conducted there by Rea of the Archaeological Survey of India between 1889 and 1905 and at Perumbair from 1904 to 1908.[3] In this connexion, the explorations conducted by Louis Lapique at Ādichanallūr in 1903-04 may also be mentioned.[4] About the same time as Jagor, Breeks, the Commissioner of the Nilgiris, recorded his observations on the rude stone monuments in the Nilgiris in his *Primitive Tribes and Monuments of the Nilgiris,*[5] and the vast collections therefrom form a valuable part of the prehistoric collection in the Madras Government Museum.

In 1882 Sewell published his list of antiquarian remains in Madras.[6] As most of Sewell's information was collected second-hand, he recommended an intensive exploration, not merely to test the truth of the information he had gathered but to form the basis for fresh evidences over a wider area. Robert Bruce Foote of the Geological Survey of India catalogued, in 1901, at the instance of Edgar Thurston, Superintendent, Madras Museum, the prehistoric antiquities that had been jumbled in the Madras Museum till that date and also the megaliths in south India.

The mass of megalithic material thus accumulated in Indian and European museums inspired a series of articles dealing with the Indian megaliths and their problems in the Special India Number of *Man* in October 1930. Next year, H. C. Das Gupta, of the Calcutta University, published a bibliography of megalithic and other prehistoric antiquities in India.[7]

3. RECENT EXPLORATION

But the recommendation of Sewell did not materialize till the end of 1944, when the Archaeological Survey of India took up in right earnest the much-desired and long-awaited exploration of megalithic monuments in south India on a scientific basis—a work which is still in progress.

[1] J. Fergusson, *Rude Stone Monuments in all Countries: their Age and Uses* (London, 1872).
[2] The work of Dr. Jagor is mentioned in Alexander Rea, *Catalogue of Prehistoric Antiquities from Ādichanallūr and Perumbair* (Madras, 1915).
[3] *Ibid.*
[4] *Ibid.*
[5] J. W. Breeks, *An Account of the Primitive Tribes and Monuments of the Nilgiris* (London, 1873).
[6] R. Sewell, *List of Antiquarian Remains in the Presidency of Madras* (Madras, 1882).
[7] H. C. Das Gupta, 'Bibliography of prehistoric Indian antiquities', *Jour. Asiatic. Soc. Bengal,* XXVII N.S. (1931).

Attention is naturally confined mainly to south India, where these monuments abound. So far, the District of Chingleput, covering roughly a little over 3,000 square miles, and the contiguous areas of the bordering Districts of North Arcot and South Arcot (Madras State) and Chittoor (Āndhra State) have been thoroughly explored, resulting in the discovery of a homogeneous group of monuments located in the area. The number of such sites discovered in Chingleput alone is about two hundred. Besides, a thorough re-exploration based on the list prepared by the State Officers has also been undertaken during this period in Pudukkoṭṭai, an erstwhile State and now a division in Tiruchirapalli District of Madras State, and in Cochin on the west coast, and the monuments in these two regions have been found to represent two different, though basically homogeneous, typological groups.

4. MEGALITHIC TYPES

Alongside the inauguration of a systematic survey came the necessity of a standard nomenclature of the different types of monuments. Previously field-workers described them by different names adopted from the existing European terms, with little success in conveying their sense. Hence the Department of Archaeology evolved a standard nomenclature,[1] which is now extensively followed in classifying the monuments.

A. Chingleput

The monuments of Chingleput District consist of the following types: (1) cairn-circles (pl. XXXVIII A); (2) dolmenoid cists made of dressed slabs of stone covered by a capstone; (3) dolmenoid cists of rough unhewn boulders; (4) dolmenoid cists with the capstone lying flush with the heap of cairn (pl. XXXVIII B); and (5) barrows or little cairn-mounds marked by quartzite chips. All these types, except the last, are invariably surrounded by a stone circle and occur together promiscuously, though here and there, at the same site, typological segregation has also been noticed. While the dolmenoid cists have been found to cluster on the rocky high ground, the simpler cairn-circles have been found to cling together on the slopes or on the farther peneplains. The field-data suggest the interment of urns, single or multiple (pl. XXXIX A), in cairn-circles or barrows, whereas legged terracotta coffins (pl. XXXIX B) or sarcophagi (pl. XL A), single or multiple, are to be expected in dolmenoid cists of all types. The barrows are seen to contain only urns and, rarely, sarcophagi. The urns are usually large in size and pyriform in shape and have a pedunculated bottom, the same shape as of the urns found in the urn-graves at Ādichanallūr. The pyriform shape of the burial-urn with an extended bottom was made the basis of a speculation by Logan that it resembled the human uterus and interment in this symbolized man's return to Mother Earth.[2] This feature, together with the similarity of other accompanying interment-goods, specially pottery, links them up with the megaliths, some of which entomb urn-burials—though the barrows are undefined by bounding circles—and leaves no doubt as to their intimate relationship with stone tombs called dolmenoid cists. It may, therefore, be reasonably postulated that they are also of the megalithic order.

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[1] V. D. Krishnaswami, 'Megalithic types of south India', *Ancient India*, no. 5 (1949).
[2] W. Logan, *Malabar*, I, pp. 180-82.

B. Areas adjoining Chingleput

While the attention of the exploratory survey was confined primarily to Chingleput District, the peripheral areas of the adjacent Districts were also surveyed for comparative purposes. The search was not without avail, as it led to the discovery of transitional hybrid types of monuments as at Tiruvālangāḍu in Tiruttani Taluk of Chittoor District (Āndhra State) and at Ariyur and Karikantāngal in Arkonam Taluk of North Arcot District (Madras State).

At Tiruvālangāḍu there is a gigantic slab-stone dolmen consisting of a massive capstone slab resting on only two dressed orthostatic slabs, held together by notches cut in their top corners. This is also distinguished by a port-hole. At Ariyur a port-holed dressed-slab dolmenoid cist of granite is surrounded by a circle of upright slabs. At Karikantāngal occurs a really hybrid dolmenoid cist, marking the transition from the rude stone dolmenoid cist to the port-holed dressed-slab one. At the centre of a large circle is a small dolmenoid cist with a port-hole on its eastern slab and surrounding this is an inner ring of rude stone boulders supporting an enormous monolithic capstone, about 18 ft. in diameter and upwards of 2 ft. 6 in. in thickness.

C. Pudukkoṭṭai

The monuments of the Pudukkoṭṭai region consist of transepted port-holed dolmenoid cists (pl. XLI A and B) with urn-burial interment together with the bounding circle and the cairn-circle, enclosing single and multiple urn-burials. The sarcophagi-interment is unknown here.

D. Cochin

The exploration of Cochin led to the discovery of a large variety of megalithic and associated monuments:

(1) dolmenoid cists without port-holes, surrounded by a single stone circle;

(2) dolmenoid cists with port-holes;

(3) urn-burials indicated by a gneissic capstone;

(4) *kuḍakallus* or hood-stones consisting of a large dressed circular slab of laterite with hemispheric top and flat bottom placed on the ground (pl. XLII A). This type may correspond to an urn-burial placed in a pit approached by a series of steps with a ledge round the top for containing the burial-furniture;

(5) multiple *kuḍakallus*, arranged in groups of three or five, each group surrounded by a large stone circle (pl. XLII B);

(6) *topikallus* or umbrella-stones consisting of a dressed circular stone—in fact a truncated cone—with chamfered edges at the bottom, supported on four dressed slabs or orthostats, planted firmly into the ground in the shape of a square at the bottom and so arranged as to taper to a smaller square at the top, flattened to receive the capstone called *topikallu* (pl. XLIV A);

(7) menhirs or big stones planted vertically in isolation and without any other megalithic appendages (pl. XL B). They are not found in alignment. The stones usually have a north-to-south orientation. The biggest stone noticed measured 16 ft. in height, 12 ft. in breadth and 1 ft. 6 in. in thickness.

(8) underground caves excavated into the lateritic subsoil which are found in association with megaliths, as at Kāṭṭakampāl, near Kunnamkulam, Cochin (pl. XLIII). The reported discovery of pottery and metallic objects in them points to their connexion with megaliths. They are usually in the nature of a circular vault, with a lowered rectangular court on one side (usually eastern), containing steps cut into the rock for access. The steps lead to one or two square or rectangular openings on the vertical face of rock at one end of the lower court, which is large enough to allow access to an adult. The vault is oftentimes supported by a monolithic rock-cut pillar, and sometimes, when the pillar is missing, a large circular hole connects the vault with the outside. The floor of the vault itself contains multiple benches cut out of the rock. Such monuments are characteristic of the soft lateritic hills of the west coast of peninsular India.

E. Other regions

Though the megaliths are ubiquitous all over the south, a few have been reported from near Nagpur in Madhya Pradesh, near Delhi,[1] Almora in the north, Baluchistan and Karachi in the north-west, in the Leh valley on the borders of Tibet and in vestigial and symbolic survivals in central and north-eastern India.

5. EXCAVATIONS OF MEGALITHIC SITES

A. Brahmagiri

The first systematic excavation in recent times of a megalithic site was conducted at Brahmagiri in Molakalmuru Taluk of Chitaldrug District in Mysore State in 1947 by the Department of Archaeology in collaboration with the Archaeological Department of Mysore.[2] The megalithic monuments of the place, comprising port-holed dolmenoid cists (pl. XLIV B) and cairn-circles enclosing pits, yielded definite chronological evidence, connected that the site was with a habitation-site, the cultural levels of which could be dated, within an allowable time-scale, with the help of datable pottery. The cranial and skeletal remains of these tombs are under examination by the Department of Anthropology.

Suffice it to note here that the megalithic culture as represented at the habitation-site of the place was found to be associated in its earlier stages with late survivals of a stone axe culture and to continue for a good length of time down to the beginning of the Āndhra culture and has been dated from the third century B.C. to the middle of the first century A.D.

B. Cochin

The excavation at Brahmagiri was followed by the excavation of a single monument at Porkalam, Cochin, in 1948, resulting in the discovery of an urn-burial placed in a pit covered by a granite capstone and surrounded by a straggling circle of laterite, the local

[1] *Ancient India*, no. 4 (1947-48), p. 302.

[2] R. E. M. Wheeler, 'Brahmagiri and Chandravalli 1947: megalithic and other cultures in the Chitaldrug District, Mysore State', *Ancient India*, no. 4.

stone. The circle-stones were submerged under accumulated earth. The skeletal remains in the urn were fragmentary and placed in a bowl inside the urn.[1]

C. Śānūr

After the completion of the exploration in Chingleput District, excavation was taken up at a representative site in the southern granitic zone, called Śānūr, about 45 miles south of Madras. During two seasons of work in 1950 and 1952 five megaliths were excavated here; of these three turned out to be of the dolmenoid cist type (pl. XLV A), made of rough unhewn boulders, of which two had their capstones flush with the cairn-heap, and contained single as well as multiple sarcophagi (pl. XLVI). One of these tombs contained skeletal remains consisting of two skulls, long bones, etc., found in the sarcophagi. Of the two others, which were superficially only cairn-circles (pl. XLV B), one contained a sarcophagus, and the other proved to be an example of pit-burial containing post-excarnation fragmentary and multiple skeletal remains, including one skull.

Though no fresh datable material came to light in the course of these excavations, enough evidence was found to establish their cultural affinity with the Brahmagiri megaliths. A study of the skeletal remains from Brahmagiri and Śānūr may throw significant light on the race of the megalithic folk.

6. THE INDIAN AND WESTERN MEGALITHS

Though it is hardly necessary to reiterate that megalithic monuments are essentially burials or tombs, it is desirable to examine the characteristics of Indian megaliths in terms of what is understood by megaliths in other parts of the world, as such monuments are found not merely in India but in the Atlantic and Mediterranean littoral, viz., England, Portugal, Spain, France, Germany, Sweden and on the eastern shores of the Black Sea among the European countries, in north Africa, in the Caucasus, Palestine and Iran in Asia. But beyond these limits and until the peninsular part of India is reached, the vast expanse of space is without any report of megalithic monuments. This gap is not only spatial but also chronological. The monuments in Europe have yielded Stone Age implements, on the basis of which they have been dated to about 2000 B.C., though the dolmens in the Caucasus area are assigned a slightly later date of 1500 B.C. But the Indian megaliths contain a profusion of iron implements and wheel-made pottery and have been ascribed, on the basis of available evidence (below, pp. 112 f.), roughly to the third century B.C. and later. This chronological gap, therefore, would indicate the urgent need for an exploration and intensive examination of the intermediate region.

Though etymologically the word 'megalith' is composed of two Greek words *megathos*, meaning 'huge', and *lithoi*, meaning 'stone', not all megaliths are built of huge stones; nor can all structures built of enormous-sized stones be called megalith. Megaliths are indeed built of stones, but their prime characteristic is that they are sepulchral in nature. Gordon Childe[2] suggests that all these burials are or ought to be collective burials, and, as evidence has shown in Europe, all the corpses were not laid simultaneously in the tombs, which were used successively over a longer or shorter period.

[1] B. K. Thapar, 'Porkalam 1948: excavation of a megalithic urn-burial', *Ancient India*, no. 8 (1952).

[2] V. Gordon Childe, 'Megaliths', *Ancient India*, no. 4.

If the number of corpses was small, the use of a megalithic tomb as a burial-vault was probably restricted to a family, but if the number was fifty or more, 'their use might have been permitted to a group larger than the natural family, to a clan'. Though the Indian megaliths do sometimes show evidence of multiple burials, the number of bodies or their fragments is much smaller, and there is also no evidence of the successive use of the same grave.

Childe has also pointed out that while the distribution of megaliths in the west is coastal, i.e., along the shores of the Mediterranean, the Atlantic and the North Sea, in India this culture penetrated far into the interior and probably travelled from the west, but how and when is not yet clearly known.

7. SOME ASPECTS OF THE INDIAN MEGALITHS

A. Influence of geology and climate

The location of the megaliths in Chingleput District and the neighbouring areas has thrown interesting and important sidelights on the effect of geology and climate upon not merely the structural form but even the situation of the burial-tombs. These monuments have invariably been found to occur on rocky high grounds, which are themselves unfit for cultivation, in close juxtaposition to a hillock and an irrigation-tank, but in very close proximity to arable land. The hills supplied the material of the structures and, by the nature of the rock, influenced their shape; the irrigation-tank, intended to hold rain-water perennially owing to the lie of the land, made the cultivation of the adjacent arable land possible. It can, therefore, be inferred that megaliths sprang up where population could thrive, and populations could thrive only where the climate was clement in the form of abundant rains to make irrigation possible.

The larger, therefore, the irrigation-tanks, the larger was the concentration of megalithic monuments near them. It is, therefore, reasonable to ascribe the introduction of the irrigation-system in south India to the megalithic folk.

In fact, the tours of exploration organized by the Department have been planned in advance with the help of the Survey of India maps to the scale of 1 in. to a mile, by picking out on them places at or near which are indicated both rocks or hillocks and tanks, and this index has proved successful in locating megalithic sites in nine cases out of ten. But even in the exceptional cases where megaliths have not been found, the absence could be attributed to deliberate destruction by the local people for stone.

About the influence of rock on the shape and structure of the monument, the example of Chingleput District should be convincing. The District can be divided geologically into two zones, viz. the granitic zone of the south and the lateritic zone of the north. As granite is harder and less easily handled or dressed, the monuments in the southern zone are mostly made of unhewn and undressed boulders, and in the few cases where slabs have been used no attempt has been made to shape them; in the northern zone dressed-slab cist-monuments built of soft (cheese stone) laterite predominate.

B. The associated pottery

By far the largest quantity of grave goods contained in the tombs, as found by excavation or chanced upon during salvage of rifled tombs, is constituted by pottery. A large number of pots, of all shapes and sizes, have invariably been interred in each tomb,

but among them a distinctive ware, called the Black-and-red Ware, has established a definite place for itself in the corpus of Indian pottery-types.

This Ware is produced by a technique called the process of inverted firing,[1] whereby the pots, kept inverted during firing, turn black at the places of direct contact with the fire, viz. the inner surface and the exterior edge around the rim, while the rest of the exterior surface turns red. This Ware varies from coarse to medium in texture, is polished and treated with a slip, is usually thin and, though turned on the wheel, is rather fragile owing to insufficient firing. It is also sometimes salt-glazed to present a shining though crackled appearance.

This Ware is common to megaliths all over the south and, on the basis of the date of megalithic monuments as based on the excavation at Brahmagiri in 1947 and other evidences (below, pp. 112-113), can be placed between the third-second century B.C. and the first century A.D.

C. The port-hole and eastern opening

An interesting feature of the slab-cist dolmens is the occurrence of a circular port-hole on the eastern slab, ranging normally from 22 to 18 in. in diameter but dwindling down in a few cases to 4 to 5 in.[2]

This feature in the form of a gap or opening, which sometimes takes the form of a passage with flanking stones on the eastern side of even a multiple rough stone orthostat dolmen, has been noticed at several places in Chingleput District. It has also been noticed in the dolmenoid cists excavated at Brahmagiri (above, p. 107) and Śānūr (above, p. 108), where, in one of the dolmenoid cists, a regular passage on the eastern side is unmistakable.

D. Orientation

Incidentally, it may be pointed out that the dolmenoid cist-chambers have an east-to-west orientation, and this is indicated in the laying of the capstone also even in the rude stone monuments. That the occurrence of the port-hole on the eastern orthostat in the slab-cist dolmens or of the opening in the case or rude stone dolmens on the eastern side and the invariable east-west orientation of dolmen-chambers are interconnected cannot be disputed.

8. THE URN-BURIALS

As stated above (p. 105), another class of interments called urn-burials, without any lithic appendage in the form of a bounding circle, has been found in large numbers at Ādichanallūr in Tirunelveli District in the extreme south of the Indian peninsula.[3] Though these burials cannot be brought into the orbit of megalithic monuments by any orthodox standard of definition, they commend themselves for inclusion in this study by

[1] A. Lucas in *Jour. Anthropological Inst.*, LIX (1929), pp. 121-129.

[2] Meadows Taylor, 'Description of Carins, cromlechs, kistvaens and other Celtic, Druidical and Scythian monuments in the Dekhan', *Transactions Roy. Irish Academy*, XXIV, pt. iii (1862), p. 331.

[3] Rea, *op. cit.*

virtue of the affinity of their contents with those of the real megaliths in the form of iron implements, Black-and-red Ware and fragmentary burials. Urn-burials have indeed been found within the enclosures of bounding circles in Pudukkoṭṭai, Cochin and even Chingleput (pl. XXXIX A), where they have also been found in barrows undefined by circles. Urn-burials are mentioned in the *Maṇimekalai*[1] of the Śaṅgam Age, alongside pit- and cist-burials, and may have, at the early stages, been without the bounding circle and, in the process of evolution, been gradually admitted into the megalithic family, as their co-existence with dolmenoid cists in the places noted above would suggest. Significantly enough, a comparative study of the pottery from the pure urn-burials of Ādichanallūr and the megalithic pottery from Pudukkoṭṭai and Chingleput shows a comparative primitiveness of the former.

9. THE STONE CIRCLES

The prime common characteristic of the megalithic monuments, leaving aside structural vagaries and regional differences, is the almost universal presence of a bounding circle of dressed or unhewn stones of irregular shape and size, varying in diameter, from exterior to exterior, from about 18 ft. to 139 ft.[2] The barrows in Chingleput District occurring within the megalithic zone, which are merely low circular mounds strewn with chips of quartzite but are not surrounded by stone circles, recall the urn-burials of Ādichanallūr, specially because they also contain urns.

Childe has pointed out that the main function of the circle was only to support or sustain the cairn of stones or tumulus covering the tombs,[3] and we find in India that the tombs which the tumuli cover are not always either megalithic or collective.

10. CHRONOLOGY

A. Literary evidence

The *Ṛigveda* mentions both burial and cremation as approved modes of disposal of the dead.[4] In the south a good volume of literature on this subject was produced in the early historic period,[5] and there are references to megaliths as we understand them today. Even inscriptional evidence is available in respect of this mode of entombment. The Śaṅgam literature, produced in the first three centuries of the Christian era, describes a state of civilization, as it is admitted on all hands, between the third century B.C. and the third century A.D. The *Maṇimekalai*, which shares with the *Śilappadikāram* the plaudits of being representative of what is known as the Augustan Age of Tamil literature, mentions five methods of disposal of the dead, viz. cremation, exposure of the dead, inhumation, cist-burial and pot-burial. Apparently all these modes were practised in those days, probably by different sections of the contemporary population.

[1] K. R. Srinivasan, 'Megalithic burials and urn-fields of south India in the light of Tamil literature and tradition', *Ancient India*, no. 2 (1946).

[2] This longest diameter has been noticed at Settupattu, Kānchipuram Taluk, Chingleput District.

[3] Childe, *op. cit.*

[4] A. A. Macdonell, *Vedic Mythology* (Strassburg, 1897), p. 165.

[5] Srinivasan, *op. cit.*

The urn-burials are variously called *Tāḷi* or *mudumakkaṭ-chāḍi* or *immattāḷi* in Tamil literature of the period from the third century B.C. to the twelfth century A.D. The stone circles are called *kaṛkiḍai* in a Tanjore inscription. The Tamil grammar *Tolkāppiyam*, the earliest extant Tamil work of its kind of the Śaṅgam date, mentions *naḍukal*, meaning the erected stone or menhir, which may be the precursor of the *vīrakkal* and *satī*-stone of later times.

But the method of burial in an urn covered by a lid seems to have been practised largely in the Śaṅgam epoch even for the funeral of kings. These references point, however, to the full interment of the body in a large pot. Nevertheless, by the eleventh or twelfth century the custom of urn-burial had become nothing but memory.

Nor do the present-day names of the megalithic monuments indicate the survival of any significant tradition about their origin among the people. In revenue-registers they are recorded as *kalkuttu*, 'places where stones are planted or pitched'. They are also locally known as *madamadakkattāḷi*, which is an obvious corruption of *mudumakkaṭṭāḷi*, 'the urn or receptacle in which ancients or ancestors are buried'. Another local name is *Pāṇḍavarkuḷi*, interpreted as meaning 'the burial-pit of the Pāṇḍavas'; it may be the derivative of some word corrupted beyond recognition. Megaliths are also sometimes known as *kuraṅgu-paṭṭaḍai*, 'the workshop of the monkeys', a corruption of *kurakkupaḍai* or *kurakkupaṭṭaḍai*, mentioned in a Pāṇḍya inscription of the thirteenth century and meaning 'a sepulchre or tomb lowered into the earth'. In the Kanarese districts they are called *moriyar mane*, the meaning of which also is obscure, and *Pāṇḍava mane* or *Pāṇḍu pare*, again interpreted as the 'home of the Pāṇḍavas', without any apparent bearing on their real purpose. In Tamil parts, in addition to the names given above, they are variously known as *nari-vaṅgu*, 'fox-hole', *nari-vīḍu*, 'abode of the foxes', *Lambāḍi iruppu*, 'gypsy hutments', *Vāli kuḍiyiruppu*, 'Vali's abode' and *eduthuvachān kallu*, 'erected stones', according to the fancy of the local people. In the Telugu country Sewell noticed the name *rākshasa gullu* or *goli*, meaning 'the graves of the *rākshasas*'.[1]

B. ARCHAEOLOGICAL EVIDENCE

(i) *Coins*

The evidence of coins for dating magaliths is meagre but nevertheless convincing.

The discovery of a corroded bronze coin in a cist-grave at Sulur in Palladam Taluk of Coimbatore District, which was dated by John Allan to the third-second century B.C., on the basis of its similarity with an Eran coin,[2] marks the earliest date so far available for this kind of tomb.

The discovery of a silver coin of Augustus in association with a hoard of punch-marked coins in a megalithic tomb called Pāṇḍukuḷi in Coimbatore takes the date forward to the age of Augustus[3] (27 B.C.-A.D. 14).

A gold coin discovered in a barrow in the Nilgiris[4] may have been a Roman aureus of the period following the shifting of the capital of the Roman Empire to Constantinople (beginning of the fourth century A.D.) pushes the survival of this culture into the historical period.

[1] R. Sewell, *op. cit.*, pp. 57-58 and 60.

[2] H. C. Beck, 'Notes on sundry Asiatic beads--beads from megalithic tombs and middens in Sulur Taluk and neighbouring districts', *Man*, special India number, XXX, no. 10 (October, 1930), p. 172.

[3] *Madras Journal of Literature and Science*, 1884, p. 214; *Indian Antiquary*, II (1873), p. 241.

[4] J. Hough, *Letters on the Climate etc. of the Neilgherris* (London, 1829), pp. 82-84.

(ii) *Pottery*

The pottery found in association with the Eran coin at Sulur contains a type distinguished by a decoration of wavy lines in yellow on a red ware. Two such pots were apparently found by Rea in the course of his excavation at Perumbair, in Chingleput District, though he left them out of account in his description of the excavation. If the pottery of Coimbatore could be dated on the basis of the Eran coin to roughly about 300-200 B.C., the megalithic pottery of Perumbair also can be similarly dated.

A further dating evidence is the unpublished discovery in 1947 at Arikameḍu (Pondicherry) of the distinctive Black-and-red (megalithic) Ware associated with typical Arikameḍu pottery of the early or middle first century A.D.

Russet-coloured pottery having a general similarity with the yellow painted Āndhra ware has been obtained from a port-holed cist in Cochin.[1]

(iii) *Beads*

Beads of glass, faïence and other materials have been sporadically noticed in the megalithic tombs. One of the earliest literary references to glass or quartz is a Tamil word *paliṅgu* used in the *Maṇimekalai* (3, 64), possibly a corruption of the Sanskrit word *sphaṭika* through the Prakrit *phalika* (quartz), occurring in the Bhaṭṭiproḷu inscription of the second century B.C. The beads found in the megalithic tombs may, therefore, be as early as 200 B.C., if not earlier.[2]

(iv) *Stratigraphy*

Rea found seventeen urn-burials in a group below a small Buddhist *stūpa* at Amarāvatī.[3] This small *stūpa* can be taken to be anterior to or at best contemporary with the Main Stūpa at the site, the beginning of which is dated to *circa* 200 B.C. Even if it is posterior to the Main Stūpa, the date of the urns can be placed around 200 B.C.

To all this must be added the evidence of the excavation conducted at Brahmagiri in 1947 (above, p. 107), where the megaliths have been dated from the third-second centuries B.C. to the first century A.D.

11. ANTHROPOLOGICAL DATA

The question as to who were the megalithic folk has long engaged the attention of researchers in the field. The limited study by Zuckerman of the cranial and skeletal finds from the urn-burials at Ādichanallūr points to the responsibility of the Dravidian race[4] for these urn-burials. Another noted anthropologist, Christoph Fürer von Haimendorf, arguing on the basis that of the two early Brahmagiri cultures (above, p. 101) it could

[1] Govinda Menon in *Man*, 1937, article no. 179.

[2] For the evidence of etched beads, see Thapar, *op. cit.*

[3] Alexander Rea, 'Excavations at Amaravati', *An. Rep. Arch. Surv. Ind.*, 1908-09 (Calcutta, 1912), pp. 88-91.

[4] S. Zuckerman, 'The Adichanallur skulls', *Bulletin of the Madras Government Museum*, N.S., General Section, II, pt. i (1930), pp. 19-20.

obviously be the megalithic that could be associated with the Dravidians,[1] seems to confirm the above view.

This proposition of Haimendorf purporting to equate the megalithic builders of south India with the Dravidian speakers is based on the following assumptions:

1. The megalithic culture, consisting of an improved ceramic technique and the use of iron, was an extraneous intrusion on the local primitive neolithic culture at Brahmagiri.

2. The edicts of Aśoka, found in three contiguous villages in the neighbourhood of the site at Brahmagiri, could have only been addressed to the more advanced iron-using megalith-builders rather than to the primitive neolithic folk of the locality.

3. Since the entire south India, which also marks the bounds of the distribution of megalithic monuments in all their varieties, speaks only Dravidian languages today, these could only have been introduced by the more vigorous intruders.

As regards the origin of the megalithic folk he is inclined towards a western source, viz. the Mediterranean region, on the analogy of port-holed cists and assumes that the first point of contact was on the west coast. He leaves the intervening lacunae in space and time (above, p. 108) to be filled up by archaeologists.

While the first and third assumptions can be easily conceded to, in respect of the second it may be stated that Aśoka's edicts make mention of four well-established Tamil kingdoms beyond his frontiers, which would indicate an earlier settlement of the 'superior Dravidian folk', at least in areas further south of the Aśokan empire.

If the megalithic folk are to be equated with the Dravidian-speaking people of the south, we have also to take into consideration the fact that at least one of the Dravidian languages, namely Tamil, had a developed literary form by the beginning of the Christian era, if not a little earlier, and as such would presuppose a sufficiently long background through which it should have existed as a *patois*. All this would mean that a date earlier than 300 B.C. for the megalithic folk in south India has to be looked for.

In this connexion, Haimendorf would agree with D. H. Gordon in considering the period between 700 B.C. and 400 B.C. as the most likely period of the immigration of the iron-using people into south India.[2]

This view, therefore, drawing attention to an interesting and important aspect of the problem, deserves careful and detailed examination on the field, as well as by linguists and anthropologists.

When the study of the skeletal material from Brahmagiri, Śānūr and Maski, as well as those coming from the current excavations in Chingleput District and the proposed ones further south in the Tamil country are completed, we shall perhaps get nearer to the solution of the problem. In the present context Ādichanallūr and its material, akin in some respects to the megaliths but differing in their large contents of bronze ware and gold diadems, seem to stand apart, and their correlation with the megalithic complex is another problem facing us today.

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[1] This view was first expressed by Haimendorf in his Presidential Address to the Anthropology and Archaeology Section of the Indian Science Congress, Poona, 1950, and elaborated in his lecture on 'New aspects in the Dravidian problems' at the Fourth Session of the International Congress of Anthropology, Vienna, 1952. A brief report of the lecture appeared in the Indian press, including the *Hindu*, Madras, September 1952.

[2] D. H. Gordon, 'The early use of metals in India and Pakistan', *Jour. Roy. Anthropological Inst.*, LXXX (1950).

12. CONCLUSION

Though the megaliths of India do not follow the same pattern even at the same site and are marked by structural differences, they have definite common features which make all of them representative of one common culture, i.e. the megalithic culture. The common features consist of the use of iron implements, which, at least at one site, viz. Brahmagiri, was an intrusion into the earlier stone axe culture which it ultimately supplanted, the wheel-turned Black-and-red Ware and post-excarnation fragmentary and collective burials. Even the urn-burials of Ādichanallūr are bound with the megalithic culture by these common features, though they do not have the megalithic appendages of either a circle or a dolmenoid cist. It has not yet been possible to assess fully the point of time when this distinctive culture first emerged upon the Indian soil, nor when it died away, as even today this mode of burial is practised in parts of India in a symbolic and conventional form by many primitive tribes.

EXPLORATION OF HISTORICAL SITES

By Y. D. Sharma

CONTENTS

1. INTRODUCTION

THE invasion of northern India by Alexander the Great in 326 B.C. is an important landmark for the chronology of early Indian history, and it is hardly surprising if for a long time it was considered a convenient point to introduce the early period of Indian history. But the rôle of a political event is not the same in archaeology as in history. The archaeologist, therefore, must probe deeper, metaphorically and literally.

The Greek contact with India left certain notable bequests, the nature and extent of which were, however, exaggerated in the early days of Indological studies. It is now clear that the classical influence touched mainly the organized urban and monastic life and left the major cultural pattern of India comparatively unaffected. The commoner industries of ordinary folk might have experienced a ripple but continued to flow substantially in the existing channel.

Pottery among these industries invests a civilization with a cognizable identity and is an essential element of what Henri Frankfort terms the 'form' of a civilization.[1] It provides us, in our present context, with a much more satisfactory basis than a mere event for reviewing the historic archaeology of the Indian sub-continent.

What, however, is to be regarded as the beginning of the historical period in India? The question is as difficult to answer as it is easy to pose. It would be futile to look for a hard and fast line between the protohistoric and historic periods. Suffice it to say that the present survey begins approximately with the second half of the first millennium B.C., when the country had stepped into the Iron Age, and over large parts

[1] *The Birth of Civilization in the Near East* (London, 1951), p. 16.
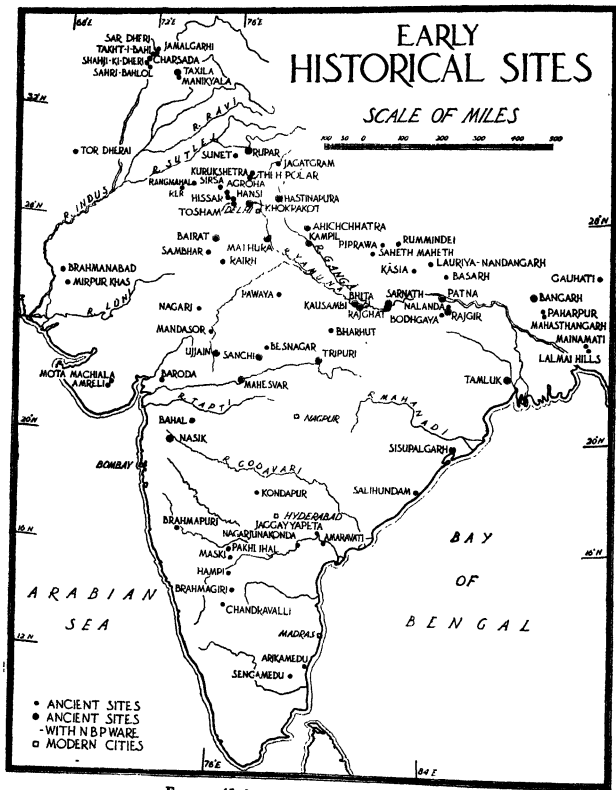
FIG. 1. (*Include* Amrāvati *as an N.B.P. ware site*)

certain standard elements of civilization could be discerned. Writing in a script from which the present scripts derive had, or was about to, come in vogue. And this was also the time when an important event of known date took place—the coming of Buddha.

In upper India, a number of widely-distributed sites of this period are marked by the occurrence of a highly individualistic shiny ware, often black, and known to archaeologists as the Northern Black Polished (N.B.P.) Ware. Over a grey or rarely buff or reddish body, the colour of its surface varies from jet-black to metallic steel-blue and includes occasionally even shades of red, orange-gold, silver and other tints; but its lustrous surface is patently distinct from other diverse coatings of shiny slips. The evidence available till 1946, including the occurrence of the Ware at Taxila considerably lower than the two coin-hoards of *circa* 300 B.C., for the first time defined its duration between the fifth and third centuries B.C. and pointed to the Gangā plains as the centre of its dispersal.[1]

Since then, mainly following extensive surface-explorations, its geographical distribution has become considerably enlarged. It is not intended to catalogue here the sites where it occurs, but a glance at the accompanying map (fig. 1) will show that from Taxila in the north it has been reported as far south as Amarāvatī in Krishṇā District;[2] eastward it has been obtained from Tamluk in Midnapur District,[3] from Bāngarh in Dinājpur District,[4] and from ancient Gauṛ in Māldā District;[5] finally, on the west, it occurs at Nāsik,[6] not much far from the coastal region. Recent explorations and the current excavation at Kauśāmbī, where it profusely occurs,[7] confirm its origin in the central Gangā plains. Its earlier estimated duration may also have to be reviewed to include another century at either end. Broadly speaking, it would appear to be coeval with the supremacy of Magadha.

Away from northern India, wherever it has been so far observed in a systematic excavation, it is associated with the Mauryan or post-Mauryan levels. In this, one is inclined to visualize its dispersal with the Mauryan conquest, although it would admittedly be somewhat premature to stress this implication at this stage.

The popularity of the N.B.P. Ware was without doubt extensive; eastern Rājpūtānā, western, central and eastern India—all imported it in some quantity, probably through traders and pilgrims. Removed from its manufacturing centre, it was precious and evidently in short supply, as broken pots in this Ware, particularly in these parts, are sometimes found rivetted with copper pins to prolong their life.

Dish and bowl are the dominant types in the N.B.P. Ware, although other shapes are by no means rare (fig. 2). In the north and upper Gangā plains, the shapes of plain wares that occur with and follow the N.B.P. pottery have been classified to some extent (e.g., figs. 5, 6 and 7, below, pp. 127-129); the report on current excavation at Kauśāmbī will, it is hoped, include a similar catalogue which would be valid for the central Gangā region. But the ceramic varieties associated with the N.B.P. Ware in other parts are still to be systematized and published.

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[1] *Ancient India*, no. 1 (1946), pp. 55 ff.

[2] Information from Shri A. Ghosh.

[3] Information from Shri B. B. Lal.

[4] Kunja Gobinda Goswami, *Excavations at Bangarh* (Calcutta, 1948), p. 27.

[5] Information from Shri S. C. Chandra.

[6] H. D. Sankalia, 'Ancient and prehistoric Maharashtra', *Jour. Bombay Branch Roy. Asiatic Soc.*, XXVII (1951), p. 103.

[7] Information from Shri G. R. Sharma, through whose courtesy I have seen some of the material unearthed at Kauśāmbī.
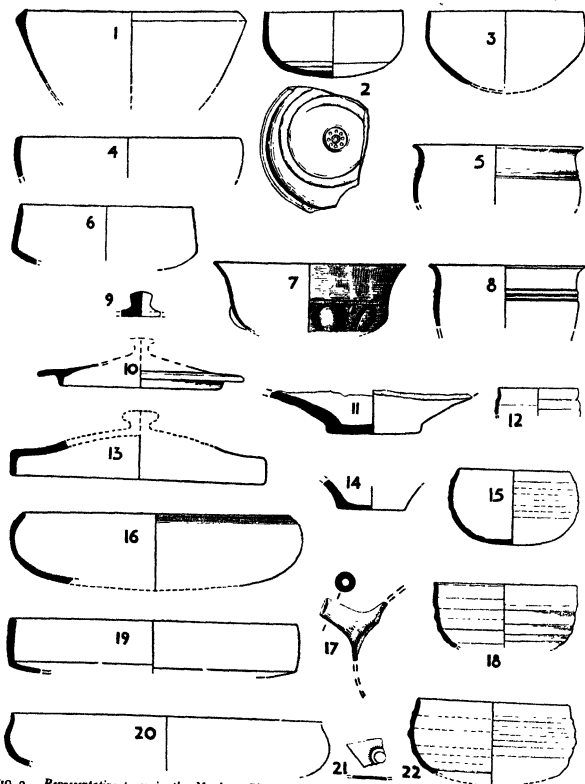
FIG 2. *Representative types in the Northern Black Polished Ware, from: 1, 3, 5, 8, 10, 17 and 19, Rupar; 2 and 18, Rājgir; 4, 9, 12, 14, 20 and 21, Tripurī; 6, Bahal; 7, Bhir Mound; 11 and 13, Hastināpura; 15, 16 and 22, Ahichchhatrā.* ½

A beginning in placing the ceramic sequence of the peninsular south on a firm chronological footing has also been made in recent years (fig. 14, below, p. 164). For the identification at Arikameḍu, near Pondicherry, of certain wares of Roman origin, imported or imitated, provided a firm datum-line for dating the local products.[1] Of these, the red-glazed 'Arretine' ware from Roman marts appears to have been regularly debarked on Coromandel coast from A.D. 20 to 50. The two-handled amphora and the wide dish, grey or greyish pink in colour, with 'rouletted' pattern on its inside, were other importations, the latter possibly indicating merely an imitation of a foreign technique of ornamentation. Both these ceramics arrived at Arikameḍu a little earlier than the 'Arretine' ware and continued to arrive longer afterwards, their total duration lasting for the initial two centuries of the Christian era.

The rouletted ware has already been traced northwards with fruitful results. Its stratigraphic horizon at Brahmagiri and Chandravalli in Mysore State has helped to date the Black-and-red 'megalithic' Ware underlying it and the white- or yellow-painted russet-coloured pottery, the so-called 'Āndhra' Ware, which lies interlocked with it[2] (below, p. 166). Further north, at Śiśupālgarh in Orissa, it occurs with a sophisticated local pottery, mostly bright red[3] (below, p. 169).

The task now is to close in on central India with the dated industries from the north and south. This line of attack has started bearing fruit, and a sequence in barest outlines is already emerging (fig. 13, below, p. 158). A black-and-red pottery, analogous in technique with the 'megalithic' pottery of the south, overlaps here in its upper levels with the N.B.P. Ware, which is followed by a red polished pottery, imported from Rome or imitating a Roman import. This black-and-red ware, of *circa* 700-100 B.C.,[4] is found associated here with copper and not iron, unlike the southern 'megalithic' pottery of similar appearance. Whether its manufacture in the south could be regarded as an extension of the central tradition is yet to be seen.

The Roman contact with India is clear also from the numerous finds of Roman coins, dated from the first century B.C. to the fourth century A.D.[5] Bronze vessels, statuettes and clay *bullae* imitating Roman coins are other evidences of Roman trade with southern and western India.

I have touched here briefly on the main ceramic sequence of early historical times. Coins, epigraphs, sculpture, architecture, seals, clay figurines and numerous other objects have not been noticed in this rapid summary; some of them are rare, and do not, in fact, present a chronological problem; others need a detailed independent treatment. Nevertheless, where necessary, reference will be made to these objects in the regional survey which follow. The details of recent excavations and explorations mentioned above have been supplied to me by several fellow-workers, and I have acknowledged their names in the footnotes. I am particularly grateful to Drs. H. D. Sankalia, S. P. Srivastava and Moreshwar G. Dikshit and Shri G. R. Sharma, Shri Vijayakanta Mishra, Shri M. N. Deshpande, Shri S. R. Rao and Shri N. R. Banerjee for supplying photographs and drawings

[1] R. E. M. Wheeler, A. Ghosh and Krishna Deva, 'Arikamedu: an Indo-Roman trading-station on the east coast of India', *Ancient India*, no. 2 (1946), pp. 17-124.

[2] R. E. M. Wheeler, 'Brahmagiri and Chandravalli 1947: megalithic and other cultures in the Chitaldrug District, Mysore State', *Ancient India*, no. 4 (1947-48), pp. 180-310.

[3] B. B. Lal, 'Śiśupālgarh 1948: an early historical fort in eastern India', *Ancient India*, no. 5 (1949), pp. 62-105.

[4] The date of this ware is tentative at this stage. Some excavators seem inclined to place it even earlier, almost at the beginning of the first millennium B.C.

[5] *Ancient India*, no. 2, pp. 116 ff.

SCHEMATIC SECTION ACROSS RUPAR MOUND 1953
SOUTH
NORTH
MODERN TOWNSHIP
UNEXPLORED
V (PLUS A.D 800-1000)
IV (C 200 B.C - A.D 600)
III (C 600-200 B.C)
II (C 1000-700 B.C)
I (C 2000-1400 B.C)
INSCRIBED SEALINGS (C 500-600 A.D)
TERRACOTTAS (SUNGA TYPE)
GOLD COIN OF CHANDRAGUPTA I (A.D 320-335)
COIN-HOARD OF VASUDEVA (A.D 143-176)
COIN OF SOTER MEGAS (C 100 A.D)
PUNCH-MARKED COINS
INSCRIBED SEAL (C 300-250 B.C)
N.B.P WARE
IRON & COPPER IMPLEMENTS
CHERT BLADES
TERRACOTTA CAKES
INSCRIBED STEATITE SEAL
BRONZE IMPLEMENTS
PAINTED GREY WARE
HARAPPAN WARE
NATURAL
59'
L. DUTT

Fig. 3

as well. I also owe thanks to Shri K. K. Sinha for assistance in the selection and arrangement of the illustrations; to Shri S. P. Jain for the map of historical sites; to Shri Lakshmi Dutt, Shri R. P. Khare, Shri L. K. Jain, Shri Mohinder Singh Panesar and Shri H. N. Sajnani for the preparation of the drawings; and to Shri S. G. Tewari and Shri R. Chatterjee for the photographs.

2. THE NORTH-WESTERN PLAINS

The north-west of the Indo-Pakistan sub-continent provides a convenient base-board to begin our survey of explored historical sites, for excepting the people who invaded India last—the Europeans—all other races and peoples crossed into the country from the north-west. The plains of the rivers of Panjab and the mountainous country to the north are two natural divisions of this country. The earliest civilizations flourished mainly in the former. For on the banks of the rivers of the Indus system and on the uplands of Baluchistan, the scattered village-communities of the Bronze Age were succeeded by the highly organized Harappans (above, p. 83). Later, these rivers were eloquently sung of and inhabited by the Vedic Aryans. Their settlements have not yet been identified with certainty, but if they are identical with the authors of the Painted Grey Ware, as they seem to be (above, p. 97), a chain of their settlements has already been located at least on the upper Sutlej. Unfortunately these rivers have not been systematically explored, except parts of the Indus, where investigations were directed mainly in search of Harappā and cognate or near-cognate cultures.[1]

A. RUPAR

Recently, however, Rupar, 60 miles north of Ambālā on the Sutlej, has revealed an almost continuous succession of occupations from the Harappā to nearly the present times (figs. 3 and 4). The material collected from other sites in the neighbourhood indicates a similar sequence over a wider area, so that Rupar may serve as an index for the entire region.

The lower two settlements, those of the Harappans and of the authors of the Painted Grey Ware have been mentioned elsewhere (above, p. 96). The latter appear to have abandoned Rupar about 700 B.C. By 600 B.C., a new settlement had, however, sprung up there, and a coarse grey pottery, clearly devolved from the Painted Grey Ware tradition, with which it shares many characteristic shapes, was now in use. Associated with it is a homogeneous assemblage of the N.B.P. Ware and plain red ware. These earliest historical levels (Period III), dated to *circa* 600-200 B.C., also yielded punch-marked and uninscribed cast coins, some with Taxila symbols, copper and iron implements and an ivory seal inscribed in Mauryan Brāhmī characters (pl. XLVIII A). The fine workmanship and the well-known polish associated with the Mauryans is to be seen here on a small scale on a polished ring-stone minutely carved with figures and motifs associated with the cult of the Goddess of Fertility (pl. XLVIII B), recalling similar stones from Taxila,[2] Patna[3] and elsewhere. *Kankar*-stone or river-pebbles set in mud-mortar were used for buildings in this period, although houses of mud and kiln-burnt bricks were by no means rare.

[1] N. G. Majumdar, *Explorations in Sind*, Mem. Arch. Surv. Ind., no. 48 (1934).
[2] John Marshall, *Taxila* (Cambridge, 1951), II, pp. 503 f.
[3] S. A. Shere, 'Stone discs found at Murtaziganj', *Jour. Bihar Res. Soc.*, XXXVII (1951), pp. 1 ff.

FIG. 4

Sequence of cultural Periods at Rupar

Period I (*circa* 2000-1400 B.C.): 1-4, pottery types; 5-12, designs painted on pottery; 13 and 14, beads; 15, inscribed seal; 16 and 17, faïence bangle and bead; 18, 20 and 21, bronze implements; 19, chert blade.

Period II (*circa* 1000-700 B.C.): 1-8, Painted Grey Ware; 9-11, beads; 12, bone stylus; 13, bone hair-pin(?).

Period III (*circa* 600-200 B.C.): 1 and 4-6, plain pottery-types; 2 and 3, types in Northern Black Polished Ware; 7, terracotta sealing; 8, carved ring-stone; 9, decorated stopper of ivory; 10, inscribed ivory seal and its impression; 11, ivory pendant; 12 and 13, silver punch-marked coins; 14, uninscribed copper cast coin; 15 and 16, iron implements; 17, copper dish; 18, bone stylus.

Period IV (*circa* 200 B.C.-A.D. 600): 1-3, pottery-types; 4 and 5, potsherds with impressed or incised designs; 6, terracotta lid (?); 7, terracotta votive tank; 8 and 9, terracotta human figurines; 10, coin of *Soter Megas;* 11, coin of Vāsudeva, Kushan king; 12, terracotta inscribed sealing; 13, silver utensil.

Period V (*circa* A.D. 800-1000): 1-3, pottery-types; 4, ivory bangle; 5, bone die; 6, ivory needle (?).

Period VI (*circa* A.D. 1300-1700): 1 and 2, plain pottery-types; 3, medieval glazed ware; 4, coin of Mubārak S̲h̲āh; 5, decorated head of a *surāhī* (water-vessel).

FIG. 4. Not to scale

A 12-ft. wide burnt-brick wall, traced to a length of about 250 ft., proceeds in a curve at the exposed ends and in all likelihood enclosed a tank, since an inlet through the wall was possibly used to feed the reservoir with rain-water (pl. XLIX A). The upper levels of this occupation are characterized by soak-wells lined with terracotta rings (pl. XLIX B).

The next occupation (Period IV) covers the rule of the Śuṅgas, Kushans, Guptas and their successors, from *circa* 200 B.C. to A.D. 600, and reveals several successive building levels (pl. XLVII). There is no dearth of datable objects in these levels. The Indo-Greeks now held sway over part of Panjab, and among their coins found at Rupar may be mentioned the issues of Antialcidas (second half of the second century B.C.), the 'nameless' Indo-Parthian king with the baffling title of *Soter Megas* (*circa* A.D. 100) and a clay mould prepared from a coin of Apollodotus II (first century B.C.). Among the tribal issues, some bear the Taxila symbol and include coins of the Audumbaras and Kuṇindas (*circa* 100 B.C. to A.D. 100) and Mathurā rulers (*circa* 200-100 B.C.). In the upper levels occurs a large hoard of copper Kushan coins of Vāsudeva and a gold issue of Chandragupta-Kumāradevī type. There are terracotta figurines in Śuṅga and Kushan styles (pl. L A) and include a seated figure of a lady playing on lyre reminiscent of Samudragupta's figure in likewise position on his coins (pl. L B). A set of three silver utensils of ritual use is again representative of Gupta craftsmanship. A number of terracotta sealings in characters of the fifth-sixth centuries provide the upper date of the period. The pottery of these levels is for the most part red (fig. 6) and is frequently decorated with incised or impressed motifs, natural or religious (fig. 7).

After a break, there is evidence of a new occupation (Period V) commencing about the ninth century and lasting for two or three centuries. But by this time the occupation had become confined to the southern part of the site where the present town lies. The spacious brick buildings of this period were constructed neatly and suggest a good measure of prosperity. Again, possibly after a short desertion, a new town (of Period VI) sprang up here and continues to flourish to this day, although the sequence is closed with a terminal date of A.D. 1700 to separate the archaeological material from recent accumulations. Pre-Mughul glazed ware, *lakhauri* bricks and Muslim coins, found on surface and in top fillings, form the main evidence of this occupation, as no structures of this period were encountered in the excavation.

The ceramic types of Rupar bring home the fact that the river-valleys of Panjab and the Gangā system were culturally knitted together from early historical times. Some of these types from Rupar, in common use over the entire north during the third quarter of the first millennium B.C., are illustrated in fig. 5. Through a transitional phase a vast variety of sophisticated types emerges in the early centuries of the Christian era, the more typical of which are shown in fig. 6. Some of these bear the imprint of Greek contact, notably the footed goblet (fig. 6, 22-24). Another 'foreign' type appears to be the long-necked, narrow-mouthed 'sprinkler' (fig. 6, 10). A good proportion of this pottery bears impressed, notched or incised designs consisting of distinctive naturalistic or religious motifs (fig. 7). The taurine, *svastika*, *nandipada*, *abhaya-mudrā*, festoon, leaf, conventional lotus or rosette, spiral and natural or stylized 'conch-shell' motif form some of these designs.

The pottery of the medieval periods is avowedly utilitarian, with little pretensions to aesthetic form and ornamentation, except perhaps the painted glazed ware introduced by the Muslim invaders.

B. THE JANAPADAS

During the half millennium preceding the Christian era parts of India were divided into several city-states, small 'republics' called *janapadas* in Sanskrit. A number of these
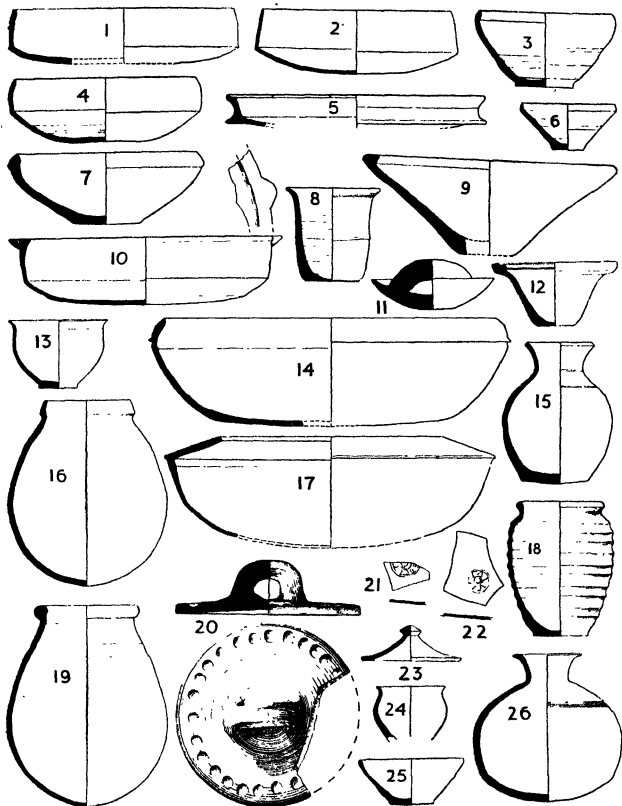
FIG. 5. *Representative early historical pottery associated with the Northern Black Polished Ware from Rupar.* $\frac{1}{4}$
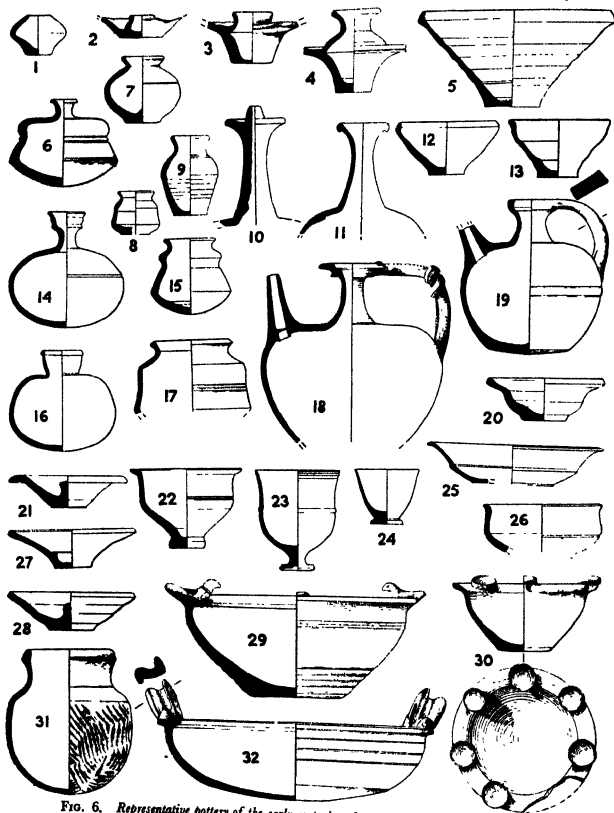
FIG. 6. *Representative pottery of the early centuries of the Christian era from Ruar.* $\frac{1}{4}$
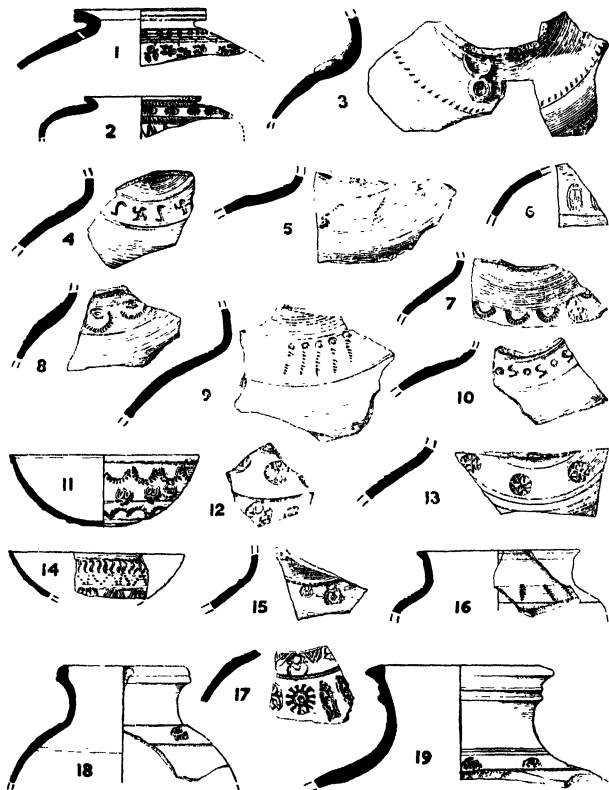
FIG. 7. *Incised and impressed designs on north Indian pottery of the early centuries of the Christian era, from: 1 and 2, Hastināpura; 3-11, 13-16, 18 and 19, Rupar; 12 and 17, Ahichchhatrā.* ⅛

are mentioned in the *Mahābhārata* and by the famous grammarian Pāṇini.[1] Archaeological corroboration of the existence of these *janapadas* comes from numerous finds of the so-called tribal coins. In the region under discussion Audumbara, Kulūṭa, Kuṇinda, Trigarta and Yaudheya are the important republics issuing coins.

Khokrā Koṭ, near Rohtak, represents a very large ancient town, possibly a capital of the Yaudheyas. In the *Mahābhārata* it is mentioned as Rohītaka. Clay moulds of coins discovered here have thrown important light on the process of casting coins in ancient India.[2] A later capital of the Yaudheyas is probably to be identified with Sunet, 4 miles west of Ludhiānā, where the early coins include Indo-Greek issues and those of Uttamadatta and Amoghabhūti, rulers of Mathurā and Kuṇinda respectively.[3] But it is the coin-moulds of the later Yaudheyas of the third-fourth centuries A.D. which are recovered here in large numbers. Of the same and subsequent dates are several clay sealings. The town continued to be in occupation till the tenth century A.D., as coins of Sāmantadeva, the Hindu king of Kabul, have also been found here.

C. Kurukshetra

The land enclosed by the Sarasvatī and Dṛishadvatī rivers, modern Sarsutī and Chautang, is called the holy land of Brahmāvarta in Sanskrit literature. Kurukshetra, the traditional scene of the *Mahābhārata* war, is part of this holy region. It is now represented by a series of mounds at Amīn, Thānesar, Pehowā (ancient Pṛithūdaka) and Rājā Karṇa kā Qilā, all on or in the vicinity of the Sarasvatī. Hiuen Tsang mentions several monasteries at Thānesar, which was an important capital at the time of his visit.[4] The last of these mounds was superficially excavated in 1921-23 without encouraging results,[5] except the discovery of a new inscribed coin of the second or third century A.D. and a terracotta sealing in Kharoshṭhī script. At Amīn two inscribed pillars dated to Kushan times were noticed.

Theh Polar, a mound on the Sarasvatī, was excavated in 1933-34[6] and again in 1937-38. The site was found much disturbed owing to depredations by brick-robbers, but it yielded coins from the Indo-Greek to Mughul rulers. Subsequently, however, older relics in the form of pottery have been collected practically from all these mounds.

D. Hariānā

The tract between the Yamunā and the Rājpūtānā desert is locally called Hariānā and appears to have been thickly populated during the early centuries of the Christian era. Of the early towns here, Khokrā Koṭ, near Rohtak, has already been mentioned. Hānsī was another large town in ancient days. Twentyeight miles south of Hānsī on Tosham Hill have been discovered inscriptions of the fourth-fifth centuries of the Christian era.[7]

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[1] V. S. Agrawala, *India as known to Pāṇini* (Lucknow, 1953), pp. 48 ff.

[2] Birbal Sahni, *The Technique of Casting Coins in Ancient India* (Bombay, 1945), pp. 4 ff.

[3] *Proc. Asiatic. Soc. Bengal*, 1884, pp. 137 ff.; A. Cunningham, *Arch. Surv. Ind. Rep.*, XIV (1882), pp. 65 ff.

[4] Thomas Watters, *On Yuan Chwang's Travels in India*, I (London, 1904), p. 314.

[5] *An. Rep. Arch. Surv. Ind.*, 1921-22 (1924), pp. 46 ff.; 1922-23 (1925), pp. 87 ff.

[6] *An. Rep. Arch. Surv. Ind.*, 1930-34 (1936), pt. i, pp. 142 ff.

[7] *Arch Surv. Ind. Rep.*, V, (1875), pp. 136 ff.; XXIII (1887), pp. 19 ff.; J. F. Fleet, *Corpus Inscriptionum Indicarum*, III (Calcutta, 1888), pp. 169 ff.

Fourteen miles west of Hissār, itself an ancient town known as Aishukarī in olden days, a series of extensive mounds at Agrohā has yielded numerous coins suggesting that it was an important *janapada* known as Agrodaka.[1] Trial-excavations here revealed a prosperous town of well-planned houses. Sirsā, ancient Śairīshaka, was also evidently a very important town, judging from the size of the high mound there.

E. Trigarta

The Doab between the Beas and Sutlej also yields evidence of occupation from late Harappā times, particularly along the river Bein. Jullundur, the ancient Jālandhara, is mentioned in the *Padma Purāṇa* as a holy region and is described at length by Hiuen Tsang.[2] The ancient town no doubt lies under the part known as Qilā Mohallā, and in the district there are several high mounds with early relics. Together with the hilly tracts of Kāngrā, etc., the Jullundur Doab is called Trigarta in Sanskrit literature, i.e., the land watered by the three rivers, Ravi, Beas and Sutlej. The hills of Kāngrā, Chambā and Hoshiārpur abound in remains of many early medieval towns and have yielded several inscriptions. A number of ancient temples also exist in these hills.

3. THE NORTH-WESTERN HIGHLANDS

In contrast with the lower hills, which appear to have remained isolated in early times, the tracts to the north-west were inhabited much earlier, though not as early as the plains below. The north-western highlands were the scene of the first Greek contacts, the surviving vestiges of which, predominantly coins, have enabled the excavators to compute a reasonable chronology for the indigenous objects lying above, below, or interlocked with them. The Gandhāra school of sculpture flourished here not merely as a style, but with important ramifications for the later Buddhist iconography, introducing the personal representation of Buddha.

A. Taxila

The picture of the successive civilizations and of racial influx in this region is almost entirely derived from Taxila, ancient Takshaśilā, 20 miles north-west of Rawalpindi in a valley of Murree Hills (fig. 8). It was extensively excavated between 1913 and 1934 and on a limited scale during 1944-45.[3] Indian literature from the two epics down to the Buddhist Jātakas is familiar with this town, the latter referring to it as a great centre of learning, a university so to speak, although no such character is apparent in the buildings uncovered, unless the scattered Buddhist establishments formed the hub of an intensive scholastic life. It was the capital of eastern Gandhāra and lay on the meeting place of three great trade-routes—from western Asia, Kashmir and eastern India.

[1]H. L. Srivastava, *Excavations at Agroha*, Mem. Arch. Surv. Ind., no. 61 (1952).

[2]Watters, *op. cit.*, I, p. 296.

[3]John Marshall, *Taxila*, 3 vols. (Cambridge, 1951); *A Guide to Taxila* (Delhi, 1936); *Excavations at Taxila: The Stūpas and Monasteries at Jauliāñ*, Mem. Arch. Surv. Ind., no. 7 (1921); A. Ghosh, 'Sirkap 1944-45', *Ancient India*, no. 4, pp. 41-84. The references to the *An. Reps. Arch. Surv. Ind.* have been omitted. For earlier exploration by Cunningham, see *Arch. Surv. Ind. Rep.*, II (1871), pp. 111 ff.

FIG. 8

Sequence of cultural Periods at Taxila (after Marshall)

Period I, Pre-Mauryan (*circa* 600-300 B.C.): 1 and 2, plain pottery-types; 3, Northern Black Polished Ware; 4, carved gem of agate; 5, ivory pendant; 6, bone bead; 7, bent-bar silver coin; 8, coin of Alexander.

Period II, Mauryan (*circa* 300-200 B.C.): 1-3, pottery-types; 4, carved ring-stone; 5-7, terracotta human figurines; 8, etched bead; 9, uninscribed copper cast coin.

Period III, Pre-Greek (?): 1-3, pottery-types; 4, terracotta human figurine; 5, coin of Diodotus II (?).

Period IV, Greek (*circa* 200-100 B.C.): 1-4, pottery-types; 5 and 6, terracotta human heads; 7, coin of Antialcidas.

Period V, Scytho-Parthian (*circa* 100 B.C.-A.D. 50): 1-8, plain pottery-types; 9 and 10, pottery with designs; 11, stone tray; 12, terracotta human figure; 13, terracotta votive tank; 14, ivory comb; 15, faience spacer; 16, ivory dice; 17, coin of Maues; 18, coin of Azes.

Period VI, Kushan (*circa* A.D. 50-200): 1, coin of Kujūla Kadphises; 2, coin of Huvishka.
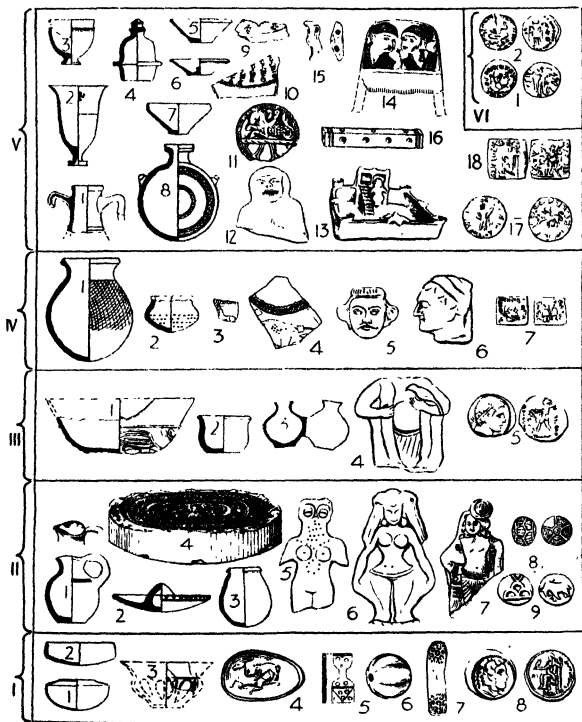
FIG. 8. Not to scale

In 326 B.C., Alexander the Great arrived here, and Āmbhi (Omphis), its king submitted to him. Later, it was conquered by Chandragupta Maurya and became a viceregal seat of the Mauryan empire; subsequently still, it came under the sway of Bactrian Greeks, Scythians, Parthians and Kushans, till the Hūṇas laid it waste in the fifth century.

The ruins at Taxila consist of three successive city-sites, Bhīr Mound, Sirkap and Sirsukh. There are four successive settlements at Bhīr Mound, from the sixth to the second century B.C. It has no planned lay-out, and its structures, largely of rubble, show poor construction (pl. LI). In the excavation of 1944, an apsidal stone structure surrounded by a number of other buildings also came to light (pl. LII). Soak-wells, lined with terracotta rings as well as large jars placed one upon another, sometimes upside down, and provided with holes at bottom, attest to a serviceable arrangement for the discharge of sewage.

The second city, Sirkap, founded by the Bactrian Greeks in the second century B.C. and later built by the Scytho-Parthians 'on the typically Greek chess-board pattern, with streets cutting one another at right angles and regularly aligned blocks of buildings'[1] (pl. LIII), provides a contrast in lay-out. The houses here are built neatly of coursed rubble-stone (pl. LIV), except in the Parthian levels, where diaper-masonry is introduced. To an earlier mud-rampart a stone defensive wall, 3½ miles long, with rectangular bastions at irregular intervals, was added in the mid-first century B.C., probably by the Indo-Parthian ruler Azes I.[2] The total occupation of the town, with six or seven strata, lasted till the arrival of the Kushans, who laid a new city, Sirsukh, within a fortified rectangle. This city has, however, largely remained unexcavated.

The city of Sirkap included certain Buddhist monuments, notably an apsidal temple and some small *stūpas*, but the main religious establishments lay outside the bounds of the three cities. Of these, built on a high podium with a core of rough rubble, the Dharmarājikā Stūpa is circular on plan and hemispherical in elevation (pl. LV). From its central hub radiate sixteen thick walls, tied in by a casing, which is externally decorated with panels to accommodate stucco images of Buddha and other deities. The original *stūpa* inside the core was probably erected by Aśoka, one of whose titles was *dharmarāja* ('king of piety'), although the exposed features do not bespeak a date earlier than Kushan. A silver scroll recovered from its chapels is inscribed in the 136th year of king Azes.

On the Hathiāl spur occupying the southern portion of Sirkap are a *stūpa* and monastery, which, according to the tradition recorded by Hiuen Tsang,[3] commemorate Kuṇāla, Aśoka's son, who suffered loss of his sight at the behest of his step-mother.

The most interesting among the religious establishments of Taxila, however, is the temple at Jāṇḍiāl, situated not far from the northern gate of Sirkap. It is supposed to have ministered to the needs of the followers of Zoroastrian faith. Resembling a peripteral Greek temple it has two ionic columns at the entrance with two more at the front porch (*pronaos*), which leads into the sanctuary (*naos*). At the far end is a back-porch (*opisthodomos*) and, in place of the usual peristyle of columns, a thick wall with windows at regular intervals.

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[1] John Marshall, *Taxila*, I, p. 4.

[2] Marshall, *ibid.*, p. 117, would now ascribe the stone fortification to the Indo-Greeks. Contrast, however, *Ancient India*, no. 4, p. 45.

[3] Watters, *op. cit.*, I, p. 246.

The datable material recovered at Taxila is indeed massive. The coins range from the punch-marked to the issues of medieval rulers of Kashmir, through local Taxilan, Greek, Indo-Scythian, Parthian, Kushan, Sassanian and Ohind issues. Cut gems of Greek workmanship, hoards of jewellery, seals and sealings, terracotta figurines and stone and stucco sculptures of Gandhāra school make it one of the richest archaeological sites.

The pottery from Bhīr Mound is for the most part plain and utilitarian, corresponding sufficiently, however, to the types known from the contemporary sites in the plains below and in the Gangā basin; among these are concave lid with loop-handle in centre, pear-shaped jar and carinated *hāṇḍī* (similar to fig. 5, 11, 16, 19 and 17). Unfortunately the results of the 1944-45 excavation have remained unpublished, while the pottery unearthed earlier is far too inadequately illustrated. In spite, however, of the presence of the N.B.P. Ware, the coarse grey ware contemporary with it is apparently unrepresented at Bhīr Mound.

The specimens from Sirkap are marked by various utilitarian and ornamental devices like pinched lip, spout-handle and stable base, some of which have definite prototypes in Greek vessels. Typically Greek, however, are the two-handled glazed amphorae, standard beakers and goblets (fig. 8, V, 1-3) and small-handled censers.

B. Charsadā

The only other excavated town-site in the north-west is Charsadā, on the Swāt river in Peshawar District, identified with Pushkalāvatī, the capital of Gandhāra. Of the several mounds here, some were excavated in 1902-03 and a settlement of *stūpas* and other buildings exposed.[1] Important finds included stucco sculptures, beads and coins from the Indo-Greek to the Kushan rulers. The illustrated pottery-shapes do not go beyond the types familiar to us from Sirkap at Taxila, although three of the jars were inscribed in Kharoshṭhī characters of Kushan age. The lower levels were never reached, although they are likely to be much earlier in view of the unusual height of the mounds, one of which, Bālā Hisār, rises to 80 ft.

About 6 miles east of Charsadā, the high mound of Sar Dherī was excavated in 1938, although some terracottas from there had been published earlier.[2] The natural soil was not touched in the limited excavation. But the coins recovered here indicated the duration of the occupation from Indo-Greek to Kushan times.

C. Other sites

Other sites excavated in this region have mainly revealed Gandhāra sculpture and the *stūpa*-architecture characteristic of Gandhāra. The ardour of the Kushans for Buddhism had inspired the construction of many Buddhist *stūpas* and monasteries in this country. The *stūpas* of Taxila and Charsadā have already been noticed; other *stūpas* deserving mention are at Manikyālā[3] in Rawalpindi District; at Takht-i-Bāhī,[4] Sahri

[1] *An. Rep. Arch. Surv. Ind.*, 1902-03 (1904), pp. 141 ff.; 1903-04 (1906), pp. 289 ff. For earlier exploration, see *Arch. Surv. Ind. Rep.*, II, pp. 89 f.; III (1873), pp. 96 ff.

[2] H. D. Gordon, 'Some terracottas from Sari Dheri, North-west Frontier Province, *Jour. Roy. Anthrop. Inst.*, 1932, pp. 163 ff.

[3] *Arch. Surv. Ind. Rep.*, II, pp. 152 ff.; V, 75 ff.; XIV, pp. 1 ff.; *An. Rep. Arch. Surv. Ind.*, 1912-13 (1916), p. 17.

[4] *Arch. Surv. Ind. Rep.*, V, pp. 23 ff.; *An. Rep. Arch. Surv. Ind.*, 1907-08 (1911), pp. 132 ff.; 1910-11 (1914), pp. 33 ff.

Bahlol[1] and Jamālgarhī,[2] near Mardan, and at Shāhjī-kī-Ḍherī,[3] near Peshawar. Unlike the hemispherical *stūpas* of Taxila and Manikyālā, these *stūpas* are raised on a square podium and consist of a drum receding in tiers, crowned by multiple umbrellas of diminishing sizes.

The gigantic *stūpa* at Shāhjī-kī-Ḍherī, cruciform on plan, was built by Kanishka, the Kushan king, and is referred to by Hiuen Tsang and other Chinese pilgrims.[4] Inside it was found an inscribed casket (pl. LVI) with a coin of Kanishka beside it. The casket enclosed a crystal reliquary with an orifice containing fragments of bone and closed by a clay sealing. The *stūpa* at Takht-i-Bāhī is elaborately decorated with stucco figures and is famous for its colossal standing figures of Buddha. An establishment of monasteries and a *chaitya* was uncovered at Sahri Bahlol, and the coins recovered here ranged from those of Azes to later Indo-Scythians. Other evidence indicated the occupation of the site down to the times of Hindu Shāhīs of Kabul.

In the fifth-sixth centuries, some brick *stūpas* were also erected in the plains of Sind and in Baluchistan. The *stūpa* at Mīrpurkhās[5] among these has three vaulted cells for the images of Buddha in the large square basement of baked bricks. Like other *stūpas* of the region, it is faced with ornamental bricks and plaques in Gupta style. The *stūpa* apparently remained in worship till the early Arab invasions (A.D. 715), as evidenced by inscribed tablets and coins. In the centre of the *stūpa*, 25 ft. below the surface, was found a stone coffer inside a chamber, and in a hole within the coffer were a number of beads, a small gold wire ring, copper coins, charcoal and grains of wheat. Tor-Ḍherai in Loralai District of north Baluchistan also contains the ruins of a *stūpa*, with moulded terracotta plaques and potsherds inscribed in Brāhmī and Kharoshṭhī of the second and third centuries A.D.[6]

The site of Brāhmanābād in Sind,[7] where the Arab capital of Mansūrā arose over an earlier Hindu town, must also be mentioned. The earlier city is not properly dated, but judging from the presence of soak-wells and the use of large-sized bricks it may be regarded as sufficiently early. Hindu images and carved bricks found here reveal late Gupta style.

4. UPPER GANGĀ-YAMUNĀ DOAB

The early Aryan civilization flowered in the Gangā-Yamunā Doab. In the upper plains of these rivers the N.B.P. Ware is somewhat more abundant than in the north-west and Panjab but still appears to be an imported commodity. Following an ill-fired,

[1] *Arch. Surv. Ind. Rep.*, V, pp. 36 ff.; *An. Rep. Arch. Surv. Ind.*, 1906-07 (1909), pp. 102 ff.; 1909-10 (1914), pp. 46 ff.; 1911-12 (1915), pp. 95 ff.

[2] *Arch. Surv. Ind. Rep.*, V, pp. 46 ff.; *An. Rep. Arch. Surv. Ind.*, 1920-21 (1923), pp. 24 ff.; 1921-22, pp. 54 ff.

[3] *An. Rep. Arch. Surv. Ind.*, 1908-09 (1912), pp. 38 ff.; 1909-10, pp. 135 ff.; 1910-11, pp. 25 ff.

[4] Watters, *op. cit.*, I, p. 203; J. Legge, *A Record of Buddhist Kingdoms* (Oxford, 1886), p. 34.

[5] *An. Rep. Arch. Surv. Ind.*, 1909-10, pp. 80 ff.

[6] Aurel Stein, *An Archaeological tour in Waziristan and Northern Baluchistan*, Mem. Arch. Surv. Ind., no. 37 (1929), pp. 64 ff. and 93 ff.

[7] *An. Rep. Arch. Surv. Ind.*, 1903-04, pp. 132 ff.; 1908-09, pp. 79 ff. For previous exploration, see M. R. Haig, 'On the sites of Brahmanabad and Mansurah in Sindh; with notices of others of less note in their vicinity', *Jour. Asiatic Soc.*, XVI N. S. (1884), pp. 281 ff.

ochre-coloured plain ceramic, possibly associated with a copper-using culture,[1] and the Painted Grey Ware,[2] the historical remains on the upper Gangā are distinguished by the presence of a thick and slightly dark grey ware indicative of a derivation from the Painted Grey Ware. The N.B.P. Ware and a unitary assemblage of distinctive red ware types occur with it. With this assortment go punch-marked coins and iron and copper implements. The devolved grey and red wares include types common with those noticed to the west at Rupar. This cultural continuum from *circa* 600 to 200 B.C. is coeval with the Mauryan rule in its upper levels. Narrow soak-wells (cf. pl. XLIX B), lined with kiln-burnt clay rings, are another feature of this culture.

The characteristics of Śuṅga, Kushan and Gupta periods are adequately reflected in their seals, sealings and coins. Likewise can their pottery, terracotta figurines, moulded plaques, sculptures and other artistic products be distinguished one from another. In the main there is a striking community of tradition between the combined ceramics of north-western plains and highlands on one hand and those of upper Gangā-Yamunā plains on the other.

A. AHICHCHHATRĀ

Ahichchhatrā, the capital of the north Pāñchāla according to the *Mahābhārata*,[3] about half a mile north-east of the village of Rāmnagar in Bareli District, served as the type-site for this region for a long time. Parts of it were excavated by Cunningham, including a mound 2 miles west of it which is supposed to conceal a *stūpa* built by Aśoka.[4] The more extensive and important work was, however, carried out here by the Archaeological Survey during 1940-44.[5]

The thick accumulations of Ahichchhatrā revealed nine 'strata' ranging from a date prior to 300 B.C. to *circa* A.D. 1100 (fig. 9). Although the presence of the Painted Grey Ware was noticed in the lowest levels at one of the excavated sites, the area excavated down to these depths was so small and disturbed that the priority of the Painted Grey to the N.B.P. Ware could not be asserted, though it appeared probable.[6]

In Period I, of the main excavated site, dated prior to 300 B.C., no structures were met with, but Period II, *circa* 300-200 B.C., revealed some mud-brick buildings and the presence of the N.B.P. Ware. Mud-brick houses continued in Period III, from *circa* 200 to 100 B.C. The first structures of kiln-burnt bricks were noticed in the succeeding levels, Period IV, of the first century B.C., when the city was also fortified by a 3½ mile long peripheral brick defensive wall over two earlier earthen ramparts. Pāñchāla coins were numerous in this Period and continued in Period V to the end of the first century A.D.

[1] B. B. Lal, 'Further Copper Hoards from the Gangetic basin and a review of the problem', *Ancient India*, no. 7 (1951), pp. 20 ff.; above, p. 93.

[2] B. B. Lal, 'The Painted Grey Ware of the upper Gangetic basin', *Jour. Roy. Asiatic Soc. Bengal* (Letters), XVI N.S. (1950), pp. 89 ff.; 'New light on the "Dark Age" of Indian history: recent excavations at the Hastināpura site, near Delhi,' *Illustrated London News*, Oct. 4, 1952; above, pp. 93 ff.

[3] B. C. Law, *Pāñchālas and their Capital Ahichchhatrā*, Mem. Arch. Surv. Ind., no. 67 (1942).

[4] *Arch. Surv. Ind. Rep.*, I, (1871) pp. 255 ff. For partial excavation by A. Führer, see his *Progress Report of the Epigraphical and Architectural Branches of the N.-W. Provinces and Oudh*, 1891-92, pp. 1 ff.

[5] A. Ghosh and K. C. Panigrahi, 'Pottery of Ahichchhatra (U.P.)', *Ancient India*, no. 1, pp. 37 ff.; V. S. Agrawala, 'The terracottas of Ahichchhatrā', *ibid.*, no. 4, pp. 104 ff.; Moreshwar G. Dikshit, 'Beads from Ahichchhatrā, U.P.', *ibid*, no. 8 (1952), pp. 33 ff.

[6] *Ancient India*, no. 1, pp. 58 ff.

FIG. 9

Sequence of cultural Periods at Ahichchhatrā

Period I (Stratum IX, earlier than the Northern Black Polished Ware): 1-4, Painted Grey Ware; 5, glass bead.

Period II (Stratum VIII, *circa* 300-200 B.C.): 1-6, and 9, plain pottery-types; 7 and 8, types in Northern Black Polished Ware; 10, stamped design on potsherd; 11 and 13, terracotta human figures; 12, etched bead; 14, uninscribed copper cast coin(Mauryan coin)

Period III (Stratum VII, *circa* 200-100 B.C.): 1-3, plain pottery-types; 4, stamped design on potsherd; 5 and 6, terracotta human figures.

Periods IV and V (Strata VI and V, *circa* 100 B.C.-A.D. 100): 1-3, pottery-types; 4, terracotta votive tank; 5, coin of Phalgunimitra; 6, coin of Bhūmimitra.

Period VI (Stratum IV, *circa* A.D. 100-350): 1-5, plain pottery-types; 6 and 7, potsherds with impressed designs; 8, terracotta human figure; 9, coin of Vāsudeva.

Period VII (Stratum III, *circa* A.D. 350-750): 1-3, pottery-types; 4, terracotta sealing bearing the inscription *Śrī-Ahichchhatrā* [*bhuktau*;] 5, faïence spacer ; 6 and 7, terracotta human heads; 8, coin of Achyu.

Period VIII (Stratum II, *circa* A.D. 750-850): 1-5, plain pottery-types; 6 and 7, pottery with impressed designs.

Period IX (Stratum I, *circa* A.D. 850-1100): 1-4, plain pottery-types; 5 and 6, potsherds with impressed designs; 7, terracotta plaque; 8, coin of Ādivarāha; 9, *gadhaiyā* coin.
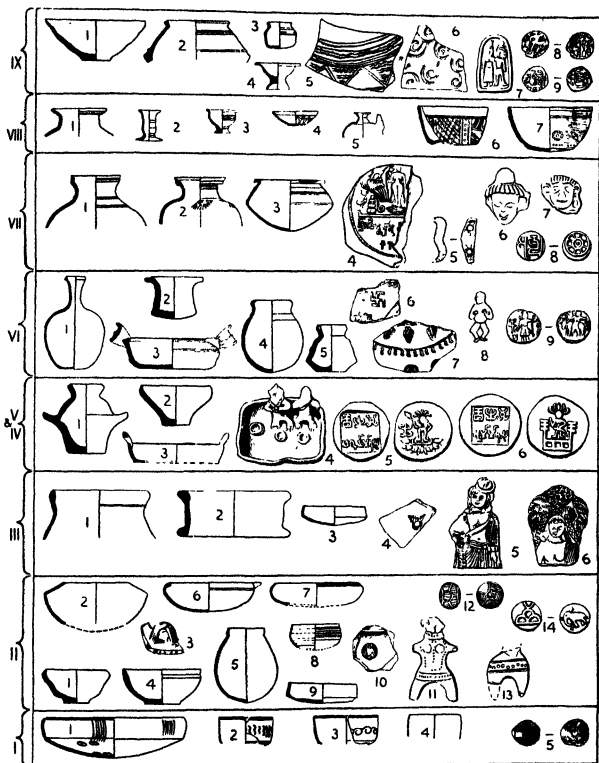
Fig. 9. Not to scale

Kushan coins were found in Period VI, *circa* A.D. 100-350. In the next Period, VII, *circa* A.D. 350-750, was encountered a temple-complex (pl. LVIII) with large-sized Brahmanical images of baked clay, the lower levels of the Period also yielding coins of Achyu, identified with Achyuta, defeated by Samudragupta in *circa* A.D. 350. Periods VIII and IX, dated to *circa* A.D 750-850 and A.D. 850-1100 respectively, showed poor buildings, and in the upper levels of the latter period were found coins of Ādivarāha and Vigraha. Elsewhere in the fortified area were identified two large terraced temples (one illustrated, pl. LVII), having their origin in Gupta times and continuing in use till the end of the city in the twelfth century, when, according to inscriptional evidence from elsewhere,[1] the capital of Pāñchāla moved to Vodāmayūtā (modern Badaun).

The excavations at Ahichchhatrā laid bare successive occupations of a long duration extending over a millennium and half. The chief value of the work lies in the fact that for the first time a beginning was made for the classification of historical pottery, the early types of which correspond largely to the illustrations in figs. 2, 5, 6 and 7.

B. HASTINĀPURA

Hastināpura, the legendary capital of the kings of the *Mahābhārata*, is identified with a village and its neighbouring mounds in Meerut District bearing the same name. Situated on a deserted bank of the Gangā, these mounds were excavated in 1950-52[2] and fully corroborated the ceramic sequence of Ahichchhatrā, apart from revealing the true position of the Painted Grey Ware.

The occupation of Hastināpura can be divided broadly into five Periods (fig. 6, above, p. 94). The first two Periods, characterized respectively by an ill-fired, ochre-coloured pottery[3] and by the Painted Grey Ware have been described elsewhere (above, pp. 93-95). The second Period was brought to an end by an extensive flood, identified by the excavator with the flood which, according to the tradition recorded in the Purāṇas, was responsible for the shifting of the capital from Hastināpura to Kauśāmbī. Period III, from the early sixth to the early third century B.C., yielded punch-marked coins, copper and iron implements and the N.B.P. Ware. About 250 B.C. the entire township was destroyed by a large-scale fire.

After a temporary break, the site was re-occupied (Period IV) about 200 B.C., as evidenced by the presence of the coins of the rulers of Mathurā and Śuṅga terracottas in the lower levels of the Period. The brick-buildings of this Period reveal a thickly populated township (pl. XXXII). In the upper levels, dated to *circa* A.D. 300, were discovered imitation coins of the Kushan king Vāsudeva. After a long gap, a new settlement grew up here about A.D. 1100 and continued to flourish till the end of the fifteenth century. In the mid-levels of this Period, V, was found a coin of Balban (A.D. 1266-1287) and in the upper levels pre-Mughul glazed ware.

C. JAGATGRĀM

The narrow valley of the Yamunā, not far from its source, has recently revealed the site of an *aśvamedha* sacrifice. Almost opposite the rock-edict of Aśoka at

[1] *Epigraphia Indica*, I (1892), pp. 61 ff.
[2] Lal, *op. cit.* (1952); above, pp. 93 ff.
[3] *Ibid.*, p. 38.

Kalsi, on the left bank of the river, has been found a brick-built altar in the form of a *garuḍa* bird (pl. LIX A), with a large number of bricks inscribed with a recurring couplet in Sanskrit, from which we learn that this was the scene of the fourth *aśvamedha* sacrifice performed by a king Śīlavarman (pl. LIX B and C). Palaeographically, the inscription is ascribed to the third century A.D.; and it is surmised that the performer of the sacrifice was a Yaudheya prince.[1]

D. The Yamunā basin

There is reason to believe that several ancient towns lay further downstream on an old course of the river now followed largely by the Western Yamunā Canal. Śrughna of the *Mahābhārata*, identified by Cunningham with the mound of Sugh,[2] was one of these towns and was visited by Hiuen Tsang.[3] From the coins obtained here, Sugh appears to have remained occupied from the late centuries before Christ down to the rule of the medieval Tomara rulers.

Modern Pānīpat is situated on a high mound which represents an ancient town of considerable dimensions. It has revealed the presence of the Painted Grey Ware and subsequent ceramics of early historic times. Indarpat (Sanskrit *Indraprastha*), the site of Purānā Qilā in Delhi, and Tilpat, 12 miles south, are two other sites which have revealed similar relics in trial-soundings.

Surface-exploration or accidental discoveries at other sites in the region confirm the general picture given above. Special mention may, however, be made of Mathurā, which is known to earliest literary traditions, particularly as the birth-place of Kṛishṇa. The Buddhist texts speak of Mathurā having been visited by Buddha. Later it formed part of the domains of the Nandas, Mauryas and Śuṅgas. The Śaka Satraps ruled here, and Kanishka made it the capital of his eastern dominion. Hiuen Tsang has left a detailed description of Mathurā of his times.[4]

No proper excavation has so far taken place here, but it has yielded a mass of stone sculptures,[5] inscriptions, terracottas and coins. The earliest inscriptions are in Mauryan Brāhmī characters. Both the Painted Grey and N.B.P. Wares figure among the potsherds picked up here and at several neighbouring sites. In Kaṭrā Keshav Deva, where Kṛishṇa is believed to have been born, below the Hindu temple destroyed by the order of the Aurangzeb, are said to lie remains of a Buddhist settlement.[6] A seated image of Bodhisattva dedicated by two nuns in the reign of Huvishka[7] (pl. LX A), a statue of Kanishka (pl. LX B) and two other princes in Indo-Scythian costume,[8] two sacrificial

[1] T. N. Ramachandran, 'Aśvamedha site near Kalsi', *Jour. Oriental Res.*, XXI (1953), pp. 1 ff.
[2] *Arch. Surv. Ind. Rep.*, II, pp. 226 ff.
[3] Watters, *op. cit.*, I, pp. 317 ff.
[4] *Ibid.*, I, pp. 301 ff.
[5] See, for instance, *An. Rep. Arch. Surv. Ind.*, 1906-07, pp. 137 ff.; 1908-09, pp. 159 ff.; 1909-10, pp. 63 ff.; *Jour. U.P. Historical Soc.*, XI (1938), pt. ii, pp. 66 ff.; J. Ph. Vogel, *Catalogue of the Archaeological Museum at Mathura*, (Allahabad, 1910); *La Sculpture de Mathurā* (Paris, 1910); V. S. Agrawala, *Handbook of the Sculptures in the Curzon Museum of Archaeology, Muttra* (Allahabad, 1939); *A Catalogue of the Brahmanical Images in Mathura Art* (Lucknow, 1951).
[6] *An. Rep. Arch. Surv. Ind.*, 1911-12, pp. 16 ff.
[7] *Ibid.*, pp. 14 ff.
[8] *Ibid.*, pp. 120 ff.

pillars (*yūpas*), one of them inscribed,[1] and a sculptors' workshop[2] form other important discoveries of Kushan dates. In 1900, a Jaina *stūpa*, the only known of its kind, was also uncovered here and yielded a mass of Jaina sculptures of Kushan workmanship.[3]

5. CENTRAL GANGĀ BASIN

During the first three decades of the present century the archaeologist's spade was active at several sites in the central Gangā plains, but little attention was paid to close observation and systematic recording of stratification and of minor characteristic products. Uncovering the structures and collecting the sculptures, coins, sealings and epigraphs, in the largest numbers possible, were the order of the day. The current excavations at Kāuśāmbī and Kumrāhār are, however, expected to make up this deficiency, and once the results of these excavations are published, we should have a reasonably clear picture of the successive cultural equipments of this part of the country. This zone is the primary home of the N.B.P. Ware, judging from its thick distribution and abundant occurrence. The commoner pottery here, from *circa* 500 B.C. to A.D. 500, has enough correspondence to that of the northern sites to indicate an intimate reciprocal contact and a largely common ceramic tradition.

Some of the earliest historical sites here are connected by literary tradition with the life of Buddha (*circa* 563-483 B.C.). Significantly enough, most of them also disclose the presence of the N.B.P. Ware. The places of his Birth, Enlightenment, First Sermon and Death are particularly holy to the Buddhists. The place of his Birth, the Lumbinī garden, has been identified with the modern village of Rummindei in the Nepal *terai*[4] but has not been excavated. Bodh-Gayā in Bihar, where Buddha attained Enlightenment, has been an important centre of Buddhism throughout the ages, but the earliest known relics there consist of nothing more than some surviving sandstone railings of Śuṅga date.[5] Sārnāth, near Banaras, and Kasiā, in Deoriā District, are the places respectively where Buddha preached his First Sermon and met his Death.

A. SĀRNĀTH

Sārnāth was excavated sporadically by far too many hands, including Cunningham,[6] before its systematic excavation by the Archaeological Survey between 1904 and 1928,[7] revealing a town of *stūpas* and monasteries, extensive in size and enlarged from time to

[1] *An. Rep. Arch. Surv. Ind.*, 1910-11, pp. 40 ff.

[2] *Jour. U.P. Historical Soc.*, II (1919-20), pp. 135 ff.

[3] V. A. Smith, *The Jain Stupa and other Antiquities of Mathura*, Arch. Surv. Ind., New Imperial Series (Allahabad, 1901).

[4] *Epigraphia Indica*, V (1898-99), pp. 1 ff.

[5] *An. Rep. Arch. Surv. Ind.*, 1908-09, pp. 139 ff.; Benimadhab Barua, *Gaya and Buddha Gaya*, 2 vols. (Calcutta, 1934). For earlier exploration, see *Arch. Surv. Ind. Rep.*, I, pp. 4 ff.; III, pp. 79 ff.; VIII (1878), pp. 66 ff.; XI (1880), pp. 141 ff.; A. Cunningham, *Mahabodhi or the Great Buddhist Temple under the Bodhi Tree at Buddha Gaya* (London, 1892).

[6] *Arch. Surv. Ind. Rep.*, I, pp. 103 ff.

[7] *An. Rep. Arch. Surv. Ind.*, 1904-05 (1908), pp. 59 ff.; 1906-07, pp. 68 ff.; 1907-08, pp. 43 ff.; 1914-15 (1920), pp. 97 ff.; 1919-20 (1922), pp. 26 ff.; 1921-22, pp. 42 ff.; 1927-28 (1931), pp. 95 ff.; D. R. Sahni, *Guide to Buddhist Remains at Sarnath*, 5th ed. (Calcutta, 1933); B. Majumdar, *A Guide to Sarnath* (Delhi, 1937).

time (pl. LXI). Subsequently the N.B.P. Ware has also been noticed here, although its stratigraphic position remains uninvestigated.

The earliest structural remains at Sārnāth are dated to the Maurya period, and some of them are ascribed to Aśoka. Among the latter are the well-known inscribed sandstone column, with a lion-capital, which now takes the proud place of the national emblem of India (pl. LXII A), the circular core of the Dharmarājikā Stūpa built with wedge-shaped bricks and a monolithic railing which possibly crowned the *harmikā* of the Stūpa. The Stūpa was enlarged subsequently on several occasions between the Kushan period and the twelfth century. To the Kushan period belongs a colossal statue of standing Buddha, originally sheltered by an inscribed umbrella. A 60-ft. square Gupta temple, with rectangular chapels on three sides and a flight of steps on the fourth represents probably the 200-ft. high *mūlagandhakuṭī* noticed by Hiuen Tsang.[1] There are also several other statues bearing inscriptions of Gupta dates.

The Dhamekh Stūpa is 'a solid cylindrical tower, 93 feet in diameter at base and 143 feet in height including its foundations' (pl. LXII B).[2] Its lower facing, built with stone, is ornamented with carved floral designs. Cunningham, who drove a shaft through its centre, found a slab 3 ft. below the surface inscribed with the well-known formula of the Buddhist creed in characters of the sixth-seventh centuries. At a depth of 110 ft. from the top he encountered an earlier brick-built structure. The Chaukhaṇḍī mound, about half a mile south of the main ruins, crowned by an octagonal tower built at the time of Akbar, represents the ruins of a large Buddhist *stūpa* or temple. One of the latest inscriptions at Sārnāth records the construction of a *vihāra* by Kumāradevī, the Buddhist queen of Govindachandra of the Gāhaḍavāla dynasty of Kanauj (A.D. 1114-54). In course of time Sārnāth became holy even to Hindus and Jainas, whose structures and statues are by no means negligible in workmanship and number.

B. Kasiā

Kuśīnagara, where end came to Buddha, was identified by Cunningham with Kasiā in Deoria District, U.P. and partially excavated by A. C. L. Carlleyle in 1876.[3] He uncovered what is generally referred to as the Nirvāṇa Stūpa. Later, between 1904 and 1912, it was intermittently excavated by the Archaeological Survey.[4] A shaft driven through its centre resulted in the discovery of a copper plate, partly engraved and partly written in ink with the *Nidānasūtra*, a Buddhist text, in Gupta characters. Of the several monasteries, the latest was erected by a local Kalachuri prince in the twelfth century. A silver coin of Kumāragupta and over a thousand seals and sealings of the Gupta and subsequent periods constitute other noteworthy finds.

C. Rājgir

Rājagṛiha, Śrāvastī, Vaiśālī, Sāṅkāśya[5] and Kauśāmbī are some of the other important places associated with the life of Buddha. Of these, Rājagṛiha, modern

[1] Watters, *op. cit.*, II, p. 48.
[2] Majumdar, *op. cit.*, p. 67.
[3] *Arch. Surv. Ind. Reps.*, I, pp. 76 ff.; XVIII (1883), pp. 55 ff.; XXII (1885), pp. 16 ff.
[4] *An. Rep. Arch. Surv. Ind.*, 1904-05, pp. 41 ff.; 1905-06, pp. 61 ff.; 1906-07, pp. 44 ff.; 1910-11, pp. 63 ff.; 1911-12, pp. 134 ff.
[5] Identified with Sankisā in Farukhābād District. See *Arch. Surv. Ind. Reps.*, I, pp. 217 ff.; XI, pp. 22 ff.

Rājgir, about 60 miles south-east of Patna, was known anciently by several names, Rājagṛiha being one of the latest and more popular. According to the *Mahābhārata*, Jarāsandha, an adversary of the Pāṇḍavas, ruled here. In more historical days it was the capital of Magadha, and Buddha visited it frequently during the reigns of Bimbisāra (*circa* 543-491 B.C.) and his son Ajātaśatru (*circa* 491-459 B.C.). The First Buddhist Council was also held here soon after his death. Mahāvīra, the last Jaina Tīrthaṅkara, is said to have passed several rainy seasons here, and the Jainas hold it holy also as the birth-place of their twentieth Tīrthaṅkara, Muni Suvrata.[1]

The site still awaits a planned and systematic excavation, but a recent scraping made in a section cut by a rivulet yielded interesting data.[2] The occupation suggested a sequence of four periods, but whether this would hold good for the entire site is yet to be seen. The lowest signs of habitation showed fragmentary dull-red sherds, and above them was a clear deposit of the N.B.P. Ware, assigned to *circa* 500-200 B.C. The third and fourth periods, in which the N.B.P. Ware was absent, were dated respectively to the first century B.C. and the first century A.D. A hitherto-unknown type of post-cremation burial came to light in the lower levels yielding the N.B.P. Ware; a pit with an elliptical bottom and an additional cylindrical base was first dug and lined with clay; then the bones left after cremation were interred in it, and the hollowed-out 'urn' sealed with clay again.

The earlier work at Rājgir consisted mainly of clearance and identification of its various features, such as neighbouring woods, hills and caves, with those mentioned in indigenous literature and the accounts of the Chinese pilgrims Fa-Hien and Hiuen Tsang.[3] Situated in a long valley, the natural defences of the city were first strengthened by building a high rampart of rubble on the hills, about 25 miles in circuit (pl. LXIII). A smaller citadel inside it, pentagonal in shape, was later encircled by an earthen wall of rubble core. Outside the valley, another fortified town, known as New Rājagṛiha, is said to have been built by Ajātaśatru.

Maṇiyār Maṭh, a cylindrical brick structure in the valley, surrounded by a stone compound-wall, was first excavated by Cunningham and later by the Archaeological Survey. This hollow edifice, built over earlier stone buildings, was enlarged several times, including in the late Gupta period, when niches were provided on its outer face for accommodating Brahmanical images modelled in stucco. Among the sculptures found around it is a sculpture with Nāga figures inscribed with the name *Maṇināga*, a serpent-deity whose shrine at Rājgir is mentioned in the *Mahābhārata*.

D. SAHEṬH MAHEṬH

Buddha passed many years of his life at the Jetavana monastery at Śrāvastī, the capital of Kosala.[4] The accounts left by Fa-Hien and Hiuen Tsang and an inscribed

[1] B. C. Law, *Rājagṛiha in Ancient Literature*, Mem. Arch. Surv. Ind., no. 58 (Delhi, 1938).

[2] A. Ghosh, 'Rājgir 1950', *Ancient India*, no. 7, pp. 66 ff.

[3] *Arch. Surv. Ind. Rep.*, I, pp. 20 ff.; III, pp. 140 ff.; *An. Rep. Arch. Surv. Ind.*, 1905-06, pp. 86 ff.; 1913-14 (1917), pp. 265 ff.; 1925-26 (1928), pp. 121 ff.; 1930-34, pp. 30 ff.; 1935-36 (1938), pp. 52 ff.; 1936-37 (1940), pp. 45 ff.; D. N. Sen, 'Sites in Rājgir associated with Buddha and his disciples', *Jour. Bihar and Orissa Res. Soc.*, IV (1918), pp. 113 ff.; Sen, *Rājgir and its Neighbourhood* (Patna, 1924); R. C. Majumdar, 'Identification of some old sites in Rājagṛiha', *Jour. Roy. Asiatic Soc. Bengal*, XV (1949), pp. 65 ff.; M. H. Kuraishi and A. Ghosh, *A Guide to Rājgir*, 3rd. ed. (Delhi, 1951).

[4] B. C. Law, *Śrāvastī in Indian Literature*, Mem. Arch. Surv. Ind., no. 50 (Delhi, 1935).

image of Bodhisattva enabled Cunningham to identify it with the twin villages of Saheṭh-Maheṭh in Gonḍā and Bahraich Districts of Uttar Pradesh.[1] Subsequent excavations brought out another inscribed statue, setting at naught the lingering doubts regarding its identification.[2] It is clear now that Jetavana is represented by Saheṭh and Śrāvastī by Maheṭh.[3] At Saheṭh a *stūpa* yielded a sandstone casket containing bones, a gold leaf and a silver punch-marked coin. At Maheṭh, a fortified town-site, containing, among other things, ring-lined soak-wells, were discovered an ivory seal, inscribed in characters of the fourth-fifth centuries A.D., and a hoard of coins, including those of the Kushan king Vāsudeva. In a ruined shrine also turned up more than three hundred terracotta panels in Gupta style, portraying epidsodes from the *Rāmāyaṇa*. The enlargements to the buildings continued till the eighth-ninth centuries.

E. Basārh

Vaiśālī, the reputed birth-place of Mahāvīra and the capital of the oligarchical Lichchhavis from early times, was the scene of the Second Buddhist Council held about a hundred years after Buddha's death. Identified with Basārh, in Muzaffarpur District,[4] the fortified ruins of this city were superficially excavated in 1903-04 and 1913-14[5] and several strata of fragmentary structures exposed. The excavations yielded a sealing of the second-third century B.C., and several hundred others of various dates down to the fifth century A.D.

The hollow lid with vase-shaped knob, the narrow-mouthed sprinkler-jar and the narrow-necked globular jar (similar to fig. 6, 3, 4, 10 and 14), characteristic of the early centuries of the Christian era, are identifiable among the published photographs of pottery. Subsequent exploration has also revealed here, as only to be expected, the presence of the N.B.P. Ware.

F. Kauśāmbī

According to the Purāṇas, Hastināpura, the capital of the Pāṇḍavas, was swept away by floods at the time of Nichakshu, fifth in descent from Parīkshit, the grandson of Arjuna. The capital was then shifted to Kauśāmbī, modern Kosam, 38 miles from Allahabad, on the northern bank of the Yamunā. The excavation here has revealed no evidence yet to confirm this tradition, but there is ample evidence to support Buddha's association with Kauśāmbī, referred to in Buddhist texts.[6]

The site has attracted attention from time to time.[7] A small-scale excavation was conducted here in 1937-38, and since 1948 the University of Allahabad has been excavating here continuously with encouraging results.

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[1] *Arch. Surv. Ind. Rep.*, I, pp. 330 ff.; XI, pp. 78 ff.

[2] *An. Rep. Arch. Surv. Ind.*, 1908-09, pp. 133 ff.

[3] *Ibid.*, 1907-08, pp. 81 ff.; 1910-11, pp. 1 ff.

[4] *Arch. Surv. Ind. Rep.*, I, pp. 55 ff.; XVI (1883), pp. 6 ff.

[5] *An. Rep. Arch. Surv. Ind.*, 1903-04, pp. 81 ff.; 1913-14, pp. 98 ff.

[6] For traditional and literary accounts of Kauśāmbī, see N. N. Ghosh, *Early History of Kauśāmbī* (Allahabad, 1935); B. C. Law, *Kauśāmbī in Ancient Literature*, Mem. Arch, Surv. Ind., no. 60 (Delhi, 1939).

[7] *Arch. Surv. Ind. Rep.*, I, pp. 301 ff.; X (1880), pp. 1 ff.; XXI (1885), pp. 1 ff.; *An Rep. Arch. Surv. Ind.*, 1913-14, pp. 261 ff.; 1921-22, pp. 45 ff.

Coins, beads, seals, terracottas and sculptures form the main acquisition from this excavation. But far more interesting is the sequence of occupations and the pottery associated with it. Above the lowest levels containing unidentified fragments of a coarse grey ware there is a barren deposit of clay. The next occupation starts practically with the N.B.P. Ware in about the sixth century B.C. Uninterrupted strata of occupation, with a unique mass of datable objects, continue right through the periods of the Mauryas, Śuṅgas, Kushans and Guptas till the time of the Hūṇas, a seal counter-struck with the name of Toramāṇa throwing interesting light on the extent of Hūṇa influence. Another interesting discovery is a seal of Kanishka.

According to the Buddhist tradition, among the monasteries built here by prominent merchants was Ghoshitārāma, built by Ghoshita. It was the scene of many a sermon by Buddha and is described in detail by Hiuen Tsang.[1] Happily, the remains of this monastery have now been identified in a corner of the fortified city with the help of inscriptions found in recent excavations (pl. LXIV).

G. Bhīṭā

About 35 miles downstream from Kauśāmbī lies a series of mounds at Bhīṭā. These mounds were superficially excavated in 1909-10 and 1911-12[2] and appeared to the excavator to represent an ancient military station and a mercantile township. The long occupation, ranging from an age prior to the Mauryas to the Gupta times, has been divided into five periods. Among the objects obtained are the N.B.P. Ware, punch-marked, uninscribed cast, tribal and Kushan coins, terracotta figurines and religious and mercantile sealings of Kushan and Gupta dates.

H. Patna

Among other ancient cities of the central Gaṅgā basin, largely contemporary with those described above, Patna, ancient Pāṭaliputra, occupies an important place. Ajātaśatru's successor, Udayin (*circa* 459-443 B.C.), transferred the capital of Magadha to this place from Rājagṛiha, and the Third Buddhist Council during Aśoka's rule was held here. The Mauryas retained it as their capital, and Megasthenes, the Greek envoy at Chandragupta's court (*circa* 322-298 B.C.), describes it as a flourishing city on the confluence of the Gaṅgā and Son, 9 miles in length and 1½ miles in width, enclosed by a wooden palisade, which was pierced with loopholes for discharging arrows. Below the rampart ran a defensive ditch which also carried the city's sewage.[3]

The high water-table and the present city, largely situated on the ancient settlement, have not permitted excavations on a large enough scale. But the accidental discoveries of terracottas, carved ring-stones and beads, all ranging on stylistic grounds from the Maurya to Gupta periods, disclose the antiquity of the site. Besides, the presence of the N.B.P. Ware suggests that a systematic excavation might bring even earlier occupations to light.

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[1] Watters, *op. cit.*, I, p. 369.

[2] John Marshall, 'Archaeological explorations in India, 1909-10', *Jour. Roy. Asiatic Soc.*, 1911, pp. 127 ff.; *An. Rep. Arch. Surv. Ind.*, 1909-10, pp. 40 ff.; 1911-12, pp. 29 ff. For earlier exploration, see *Arch. Surv. Ind. Rep.*, III, pp. 46 ff.; X, pp. 5 ff.

[3] J. W. McCrindle, *Ancient India as Described in Classical Literature* (Westminster, 1901), pp. 42 f.

Two sites have, however, been worked on to some extent. At Kumrāhār, during the excavations of 1912-16,[1] below some brick structures assigned to the Gupta period, eighty heaps of polished stones, in eight rows of ten heaps each, were discovered amidst a deposit of charcoal and ash. There was an interval of 15 ft. from heap to heap. This was taken to be the site of a pillared hall of Mauryan date, the wooden superstructure of which was assumed to have caved in as a result of a conflagration, leaving an ashy deposit. To the south of this hall were discovered seven wooden platforms, each 30 ft. long, 5 ft. wide and 4½ ft. high, but their purpose remained unascertained. The excavator, D. B. Spooner, ascribed a Persepolitan origin to the hall and put forth the astounding view that the pillars of the hall had sunk—in fact, were probably still sinking—deep into the soft slimy earth underneath. The current excavation here by the K. P. Jayaswal Research Institute, Patna, has revealed that the missing pillars, or the surviving stumps thereof, were removed during the second century B.C. after the conflagration. An enormous brickwork and structures from the Mauryan to late Gupta times have also come to light in recent excavations (pl. LXV). These include a monastic establishment, known as Ārogya-vihāra according to a clay sealing.[2]

Corresponding roughly to the late Mauryan, Śuṅga, Kushan, Gupta and late Gupta times, the occupation here has been divided into five periods. From the lowest levels dated prior to *circa* 150 B.C. come lipped bowls of a black-on-red ware, interlocked with coarse grey and red pottery and sherds of the N.B.P. Ware. The succeeding pottery is red and often coarse in texture and contains shapes common with other early historical sites in northern India. Punch-marked, uninscribed cast, Kushan and Kauśāmbī issues figure among the coins recovered here, and particularly charming are some terracottas of Gupta workmanship (pl. LXVI).

At Bulandībāgh,[3] again below some brick buildings of Gupta date, was found a unique wooden construction, consisting of a series of 14-ft. long wooden planks at bottom, flanked by 15-ft. high wooden uprights, which were spanned on top by tenoned planks, the entire arrangement making a hollow passage. This structure was uncovered to a length of 250 ft. without reaching its end. It was identified with the wooden palisade mentioned by Megasthenes. A similar wooden structure without, however, the bottom planks, also came to light accidentally at Gosain-khanḍa,[4] half a mile east of Bulandībāgh.

I. RĀJGHĀṬ

Vārāṇasī, from which the name of modern Banaras is derived, was known as a great city from early times, but it was an accidental discovery that disclosed its exact location. In 1940, while earth was being removed for reconstructing the railway-station at Rājghāṭ, north of Banaras, on the bank of the Gaṅgā, a mass of ancient structures and other relics comprising clay sealings, terracotta figurines and distinctive pottery, including the N.B.P. Ware, came to light. The top deposit of 13 ft. had already been removed by railway-contractors by the time the Archaeological Survey reached the scene for 'salvage'

[1] *An. Rep. Arch. Surv. Ind.*, 1912-13, pp. 53 ff.; *Progress Rep. Arch. Surv. Ind., Eastern Circle*, 1912-13, pp. 55 ff.; 1913-14, pp. 45 ff.; 1915-16, pp. 27 ff. For earlier explorations, see *Arch. Surv. Ind. Rep.*, VIII, p. 24; L. A. Waddel, *Report on the Excavations at Pāṭaliputra* (Calcutta, 1903).

[2] Information from Dr. A. S. Altekar and Shri Vijayakanta Mishra.

[3] *An. Rep. Arch. Surv. Ind.*, 1926-27 (1930), pp. 135 ff.

[4] *An. Rep. Arch. Surv. Ind.*, 1935-36, pp. 54 f.

operations[1] which revealed, among other brick structures, a large temple hall supported on twelve pillars and a large mass of the N.B.P. Ware, but the natural soil was not struck.

J. Piprāwā

Among the *stūpas* in this region, the *stūpa* at Piprāwā in Basti District is the only one of a probable pre-Aśokan date. It yielded a vase inscribed in characters apparently pre-Aśokan and a gold leaf bearing a female figure with exaggerated hips, possibly a representation of the Goddess of Fertility.[2]

K. Lauriyā-Nandangarh

In Champāran District of Bihar, at Lauriyā there is an inscribed pillar of Aśoka and fifteen *stūpas*. The site was explored and partially excavated by Cunningham and his assistants H. B. W. Garrick and A. C. L. Carlleyle.[3] In 1904-07 four of the mounds were excavated by the Archaeological Survey under Th. Bloch, and others were re-excavated in 1935-37 under N. G. Majumdar.[4] In Bloch's excavation one of the *stūpas* was found to contain a deposit of burnt bones with charcoal, and another yielded a gold leaf with a female figure akin to the one from Piprāwā. Bloch labelled the mounds as Vedic burial tumuli, but there is no evidence to support this. A more probable view is that they represent Buddhist *stūpas*.

Nandangarh, about a mile south-west of the Aśokan pillar, represents a fortified habitation-site, in the eastern corner of which is a 80-ft. high mound, which was excavated in 1935-39 and revealed a large *stūpa* having a polygonal base and rising in terraces. In the earthen core of the *stūpa* were found punch-marked and cast copper coins, terracotta figurines and clay sealings of the first century B.C. Further down, 35 ft. below the structural surface, was found a complete miniature *stūpa*, beside which lay a copper vessel containing a long strip of a birch-bark Buddhist manuscript written in characters of the early fourth century. It was evident that the *stūpa* had been reconsecrated about that date by cutting through the structure from above.

L. Nālandā

According to literary tradition, Nālandā, 6 miles north of Rājgir, was visited by Buddha and Mahāvīra. Aśoka is said to have made offerings here at the *chaitya* of

[1] Krishna Deva, 'Excavations at Rājghāṭ near Benares', *Annual Bibliography of Indian History and Indology*, III (Bombay, 1944), pp. xli f.; V. S. Agrawala, 'Rajghat terracottas', *Jour. U.P. Hist. Soc.*, XIV (1941), pt. i, pp. 1 ff.

[2] W. C. Peppé and V. A. Smith, 'The Piprahwa stupa, containing relics of Buddha', *Jour. Roy. Asiatic Soc.*, 1898, pp. 573 ff.

[3] *Arch. Surv. Ind. Rep.*, I, pp. 68 ff.; XVI, pp. 104 ff.; XXII, pp. 47 ff.

[4] *An. Rep. Arch. Surv. Ind.*, 1904-05, pp. 38 ff.; 1906-07, pp. 119 ff.; 1935-36, pp. 55 ff.; 1936-37 pp. 47 ff.

Śāriputra, Buddha's disciple, and erected a temple. But the excavations carried out by the Survey from 1916 onwards have not revealed any relics of a pre-Gupta date.[1]

By the time of Harsha (A.D. 606-648), Nālandā had become the main centre of Mahāyāna cult and a centre of learning—a so-called university—with a vast campus of temples and monasteries. The Chinese pilgrims Hiuen Tsang and I-tsing both studied at Nālandā and have left detailed descriptions of the settlement and its life.[2]

The main temple and three smaller ones stand here in a row, south to north, with open spaces between them. The square structure of the main temple (pl. LXVII), at the southern end of the row, is surrounded by several votive *stūpas* and shows seven successive additions, horizontal and vertical. During the fifth rebuilding in about the sixth century, corner-towers and niches with stucco figures were added to adorn the enlarged structure (pl. LXVIII). The three other temples likewise show two stages of accretions and are surrounded by votive *stūpas*. The objects of worship in each case were colossal stucco images of Buddha.

To the east of the rows of temples lie eight monasteries in a row, while two others form an oblique corner in the south-east. The monasteries take the form of a quadrangle enclosing cloistered cells on the inside (pl. LXIX). Within the quadrangle or in the cell facing the entrance is usually a shrine for worship. A square temple to the east of the monasteries is decorated along its base with panels of sculpture, Brahmanical and Buddhist, and other motifs.

Nālandā has yielded a number of stone sculptures and terracotta plaques and a still larger number of bronzes, indicating the existence of a flourishing school of bronze-casting (pl. LXX). The seals and sealings from here, private and of corporate bodies, including those of the monasteries, belong mostly to the Gupta and Pāla periods and are particularly valuable as sources of history. Datable evidences are furnished by the coins of Kumāragupta I (A.D. 414-455), Narasiṁhagupta (*circa* A.D. 470-473), Śaśāṅka (first half of the seventh century), Ādivarāha or Bhoja I (*circa* A.D. 840-890) and Govindachandra of the Gāhaḍavāla dynasty (A.D. 1114-1154). The bulk of the establishments at Nālandā, however, belong to the period of the Pālas, who were great patrons of Mahāyāna Buddhism.

6. RĀJPŪTĀNĀ

Archaeologically, Rājpūtānā is still largely *terra incognita*. This is partly due to the fact that it is made up of ex-Princely States, only a few of which promoted archaeological research, and partly to the desert-character of the region, which has been generally misconceived as incapable of having sustained civilization in ancient times. In fact, however, civilization is of high antiquity in Rājpūtānā, geographically and culturally divisible into two regions to the north and south of the Aravalli hills. Beginning with protohistoric times civilization flourished along the rivers Sarasvatī and Dṛishadvatī, now dried up in the northern sandy region; in later periods it was nurtured particularly in the green and fertile belts to the south of the Aravalli hills.

[1] *An. Rep. Arch. Surv. Ind.*, 1922-23, pp. 104 ff.; 1923-24 (1926), pp. 70 ff.; 1924-25 (1927), pp. 82 ff.; 1925-26, pp. 100 ff.; 1926-27, pp. 127 ff.; 1927-28, pp. 97 ff.; 1928-29 (1933), pp. 85 ff.; 1929-30 (1935), pp. 135 ff.; 1934-35 (1937), pp. 38 ff.; 1935-36, pp. 50 ff.; 1936-37, pp. 42 ff.; A. Ghosh, *Guide to Nālandā*, 3rd. ed. (Delhi, 1946). For earlier exploration, see *Arch. Surv. Ind. Rep.*, I, pp. 28 ff.; VIII, pp. 79 ff.; A. M. Broadley, *Ruins of the Nalanda Monasteries at Burgaon* (Calcutta, 1872).

[2] Watters, *op. cit.*, II, pp. 164 ff.; J. Takakusu, *A Record of the Buddhist Religion* (Oxford, 1896).

A. Bikaner

Sporadic work has been carried out on several sites in Rājpūtānā.[1] In 1940-41, Aurel Stein surveyed Bikaner and Bahawalpur States, mainly in search of prehistoric and protohistoric remains. Recently the Department of Archaeology has covered the dried-up beds of the Sarasvatī and Dṛishadvatī. Although the chief contribution of this survey lies in a definite identification of Harappā settlements in the region, it has also revealed the existence of the Painted Grey Ware (above, pp. 96) and a new ceramic tradition of the early centuries of the Christian era, approximately contemporaneous with Kushan and early Gupta periods.[2] This tradition, designated the 'Rangmahal' culture from the type-site near Sūratgarh in Bikaner, just now excavated by the Royal Swedish Expedition,[3] consists of a red ware painted with characteristic designs in black (figs. 10 and 11). Curiously enough, these designs show certain resemblances with Harappā motifs, but for all we know at present, they may be a regional product with little dispersal outside Rājpūtānā. From the site of Rangmahal some terracotta plaques in early Gupta tradition (pl. LXXI) had been found by Tessitori. Moulded beautifully, they usually treat of mythological subjects.

B. Udaipur

The N.B.P. Ware is found at Bairāṭ in Jaipur, where certain distinctive plain pottery-types are also found to be identical with those of the northern region. On the other hand, at Dhūlkoṭ near Āhāṛ (ancient Āghāṭa not far from the town of Udaipur) has been noticed a black-and-red ware industry, indicative of the inverted firing technique.[4] Often the pots are painted with dots and lines in white. This ware underlies plain red wares of Kushan period, but its relationship with other known wares and the extent of its distribution still remains to be ascertained. It is conceivable to regard it as an extension from western India, where the technique of black-and-red ware was already established before the middle of the first millennium B.C., possibly even earlier (below, pp. 158 ff.).

C. Bairāṭ

Fiftytwo miles north of Jaipur, situated in a narrow valley, is the small town of Bairāṭ, one of the few sites excavated in Rājpūtānā. It was visited first by Cunningham and subsequently by his assistant A. C. L. Carlleyle.[5] Later, excavation was carried out here by the Archaeological Department of Jaipur State.[6]

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[1] See, for instance, references to L. P. Tessitori's work in Bikaner in *An. Rep. Arch. Surv. Ind.*, 1917-18, pt. i (1920), pp. 21 ff. and 27; 1918-19, pt. i, (1921), pp. 22 f.

[2] A. Ghosh, 'The Rajputana desert—its archaeological aspect', *Bulletin National Inst. Sciences of India*, no. 1 (1952), pp. 37 ff. The priority of the Painted Grey Ware settlements to the Rangmahal ones was evident from surface-examination and was also stratigraphically established at a site called Rer, 32 miles south-west of Rangmahal (pl. LXXII).

[3] Hanna Rydh, 'The Swedish archaeological expedition to India', *Antiquity*, XXVII, no. 107 (1953), pp. 169 f.

[4] Sherds from Āhāṛ examined through the courtesy of Dr. S. P. Srivastava.

[5] *Arch. Surv. Ind. Rep.*, II, pp. 242 ff.; VI (1878), pp. 91 ff.

[6] D. R. Sahni, *Archaeological Remains and Excavations at Bairāṭ* (Jaipur).
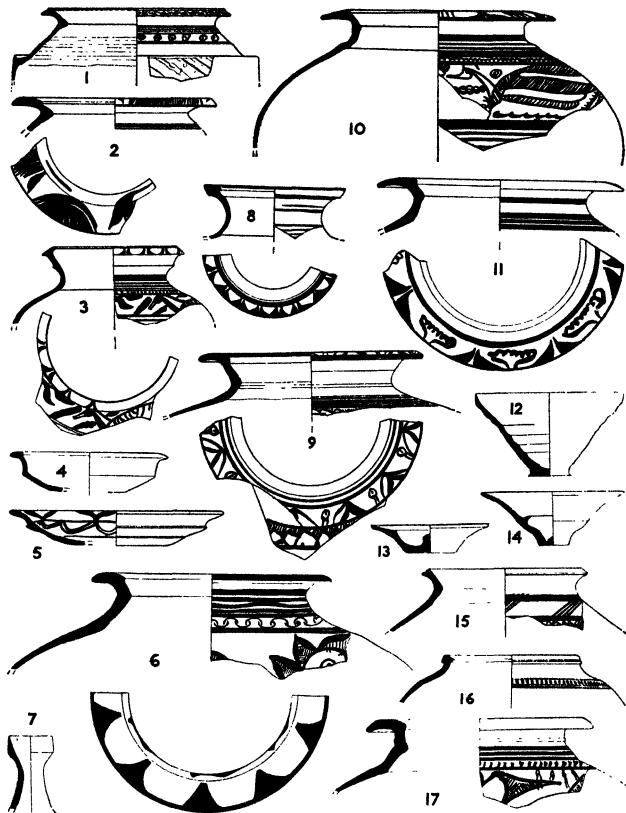
FIG. 10. *Representative pottery-types of 'Rangmahal' culture.* ¼
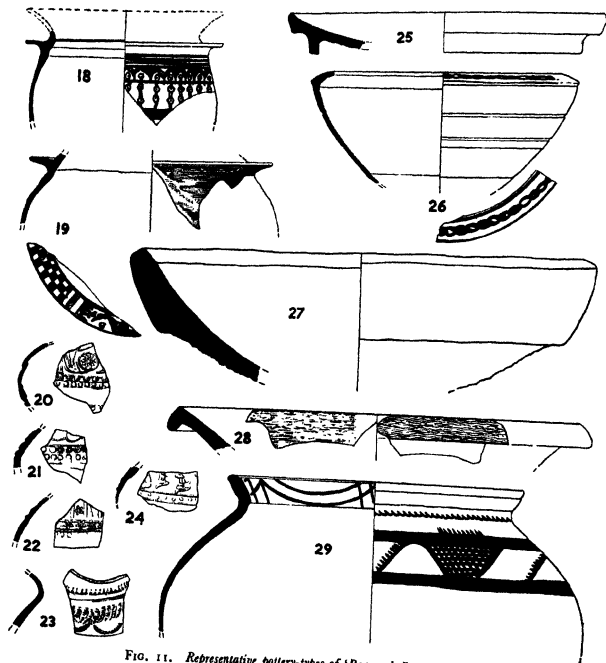
FIG. 11. *Representative pottery-types of 'Rangmahal' culture.* $\frac{1}{4}$

A stone edict of Aśoka, the so-called Bhābrū Rock-edict, now in Calcutta, had been known from this place for a long time. Subsequently another rock-edict was discovered about a mile from the site. The excavation revealed a heap of polished and unpolished pieces of stone, no doubt parts of one or more pillars and a monastery and an interesting type of temple, built during the Maurya period. The latter consisted of a circular brick-built chamber, on the outer face of which panels of plaster alternated with octagonal wooden columns.[1] The chamber was enclosed by an encircling wall leaving an ambulatory passage around the central structure.

Terracotta figurines, beads and punch-marked and Indo-Greek coins formed other important objects recovered in the excavation. The pottery was not classified according to the observed strata, but the published account and illustrations reveal that in addition to the N.B.P. sherds, some of them rivetted with copper pins, there were also coarse grey dishes usually associated with this pottery. To the early centuries of the Christian era belong waisted miniature jars, miniature bottles with slight carination above base, lids with lamps on rim, jars with thickened rim and reed-impressed pattern (similar to fig. 6, 6, 8, 30 and 31) and clay lamps with a central tube to suspend them, all of which occur also at northern sites. Potsherds with impressed designs, characteristic of these centuries. are also present.

D. Rairh

Fiftysix miles south of Jaipur, Rairh also revealed evidence of occupation from the third century B.C. to the second century A.D., with traces of later occupation of Gupta times.[2] Soak-wells lined with baked clay rings were found here in very large numbers, and there were numerous coins consisting of hoards of punch-marked and Mālwā coins (*circa* 200 B.C.-A.D. 200) and Mitra coins. Terracotta figurines, beads, seals and distinctive pottery make up the other finds. Pottery decorated with impressed motifs, concave lids with looped handle (similar to fig. 5, 11), vase-knobbed lids and miniature bottles with carination above the base (similar to fig. 6, 3-4 and 8) form some of the characteristic types of the early centuries A.D.

E. Sāmbhar

Śākambharī, modern Sāmbhar, known for its salt-lake and familiar to historians as the capital of the Chāhamāna princes, was first occupied in much earlier times. Amateur hands had excavated here a mass of objects,[3] which included a faceted sealing, not identified at the time, but later dated palaeographically to the third century B.C. The more recent work here in 1936-38[4] confirmed its occupation from the third century B.C. to the tenth century A.D., the exposed structures falling mainly between the second century B.C. and the ninth century A.D. The coins found here comprise punch-marked, Indo-Greek, Yaudheya and late Indo-Sassanian issues.

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[1] Cf. S. Piggott, 'The earliest Buddhist shrines', *Antiquity*, XVII, no. 65 (1943), pp. 2 ff.

[2] K. N. Puri, *Excavations at Rairh* (Jaipur).

[3] T. H. Hendley, 'Buddhist remains near Sambhur', *Jour. Roy. Asiatic Soc.*, XVII (1885), pp. 29 ff.

[4] D. R. Sahni, *Archaeological Remains and Excavations at Sāmbhar* (Jaipur).

F. NAGARĪ

Eight miles north of Chitorgarh, the site of Nagarī (ancient Madhyamikā) has also been superficially excavated.[1] Punch-marked and Mālwā coins, inscribed stones, moulded plaques and sculptures found here suggest the occupation of the town from *circa* third century B.C. to seventh century A.D. At the centre of the mound was an early Gupta temple dedicated to Śiva. Recent exploration here has also yielded the Red Polished Ware known from western India and also Kshatrapa coins.

7. EASTERN INDIA

Of the two distinct physiographic divisions of Bengal, the northern and southern, the former is an older geological formation, but civilization existed over both of them from early historical times. The northern portion, the Varendra country of old, however, sustained a thicker population on account of its higher altitude and other conditions favourable to sustenance. The earliest historical remains in Bengal are assigned to the Maurya period, but the occurrence of the N.B.P. Ware at Bāngarh, Tamluk and Gauṛ (above, p. 119) opens up the possibility of the discovery of even earlier occupations. The excavated pottery from various sites has never been classified, but the few illustrations that have appeared in different publications make it abundantly clear that only a very limited range of north Indian types has analogues in the material from Bengal. Apparently, the types for the most part evolved regionally, but there was some contact between the traditions of the north and of the lower Gangā tract. In the absence of stone the craftsmen of Bengal had to fall back on clay, their terracotta plaques revealing a unique continuity of development and an unsurpassed skill from the seventh to the eighteenth century.

To the north in Assam, the ancient Kāmarūpa, the picture is rather vague. On one hand we have menhirs and dolmens of uncertain date, and on the other there are the temples and sculptures of medieval times, the more remarkable of them being near Tezpur and Gauhāṭi.[2] Near Tezpur, the old temple at Dah Parbatiyā has preserved a beautifully carved door-jamb in late Gupta tradition.[3] To the east of Sadiya, near Bhīshmaknagar, the ruins of the so-called Tāmreśvarī temple have revealed some beautiful terracotta plaques in medieval style.[4]

A. TAMLUK

Referred to in Indian literature by different names, such as Tāmraliptā, Dāmaliptā, Tāmraliptī or Tāmraliptikā, the port from where Indian seacraft sailed to the islands in the Indian Archipelago and China is identified with Tamluk on the Rūpnārāyan river in Midnāpur District.[5] It is mentioned by Ptolemy under the name of Tāmalitēs, from

[1] D.R. Bhandarkar, *Archaeological Remains and Excavations at Nagarī*, Mem. Arch. Surv. Ind., no. 4 (1920). For earlier work, see *Arch. Surv. Ind. Rep.*, VI, pp. 196 ff.; Kavi Raj Shyamal Das, 'Antiquities at Nagari', *Jour. Asiatic Soc. Bengal*, LVI, pt. i (1887), pp. 74 ff.

[2] See, for example, *An. Rep. Arch. Surv. Ind.*, 1924-25, pp. 94 ff.

[3] *Ibid.*, pp. 98 ff.

[4] *Ibid.*, 1906-07, pp. 25 ff.

[5] *Ibid.*, 1921-22, pp. 74 ff.

Prakrit *Tāmalitti*, and was visited by the Chinese pilgrims Fa-Hien (399-414), Hiuen Tsang (629-645) and I-tsing (673-693).

The site has not been excavated so far, except for a few trial-trenches sunk in 1940.[1] The objects picked up here on surface or recovered during the superficial excavation contain, however, sufficient evidence of its high antiquity. The N.B.P. Ware, silver and copper punch-marked coins, rectangular cast coins and a large number of terracotta figurines are among these objects.

B. Bāngarh

Bāngarh in Dinājpur District, anciently known among others by the names of Koṭivarsha and Devīkoṭa, lies on the banks of the Punarbhavā, which replenishes the waters of the Padmā, a major distributary of the Gangā. It was excavated by the University of Calcutta during 1937-41[2] and again in 1951.

Five strata dating from the Maurya period to the tenth-eleventh centuries were recognized here by the excavators. In the lowest occupation was exposed a ring-lined soak-well; the potsherds from this level included specimens of the N.B.P. Ware. The second period, coeval with the reign of the Śuṅgas, was characterized by prosperous buildings, drains, cess-pits, and a brick-built rampart-wall. Terracotta figurines, typically Śuṅga in moulding technique and features, were among the objects from this level. The pottery from the third period, covering the Kushan and Gupta times, shows various impressed decorative motifs. During this period and the following one, when the Pālas had come on the scene, the rampart-wall was raised higher. A unique lotus-shaped small tank, originally covered with a pillared canopy, belongs to the Pāla period. With the tank at the centre, the primary plan of the building is cruciform, a chamber on each corner communicating with the tank. Carved bricks and stone sculptures form other evidence of this period. The buildings of the last period have not survived, but the abundance of glazed potsherds leaves no doubt as to the age of the top levels.

The plain pottery from Bāngarh (fig. 12) is quite different from the types found at the sites on the upper and central Gangā, although a contact with the north and development on parallel lines is certainly indicated. The Kushan and Gupta levels show impressed designs, albeit the motifs are different from those found in the north.

A vase-knobbed (fig. 12, II, 13) lid and a miniature bottle with carination above the base show correspondences to approximately contemporary north Indian types (fig. 6, 3-4 and 8), although there is a distinct variation in features.

C. Pahārpur

The ruins of the Buddhist temple and monastery of Somapura, founded by Dharmapāla (*circa* A.D. 770-815), the second Pāla king, lie at Pahārpur in Rājshāhī District of East Bengal and were excavated during 1926-34.[3]

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[1] T. N. Ramachandran, 'Tāmraliptī (Tamluk)', *Artibus Asiae*, XIV (1951), pp. 226 ff.

[2] Goswami, *op. cit.* For earlier exploration, see *An. Rep. Arch. Surv. Ind.*, 1921-22, pp. 83 f.

[3] K. N. Dikshit, *Excavations at Paharpur, Bengal*, Mem. Arch. Surv. Ind., no. 55 (1938). For earlier reports, see M. Martin, *Eastern India*, II (1838), p. 169; E. V. Westmacott, *Jour. Asiatic Soc. Bengal*, XLIV (1875), p. 188 ; *Arch. Surv. Ind. Rep.*, XV (1882) pp. 117 ff.
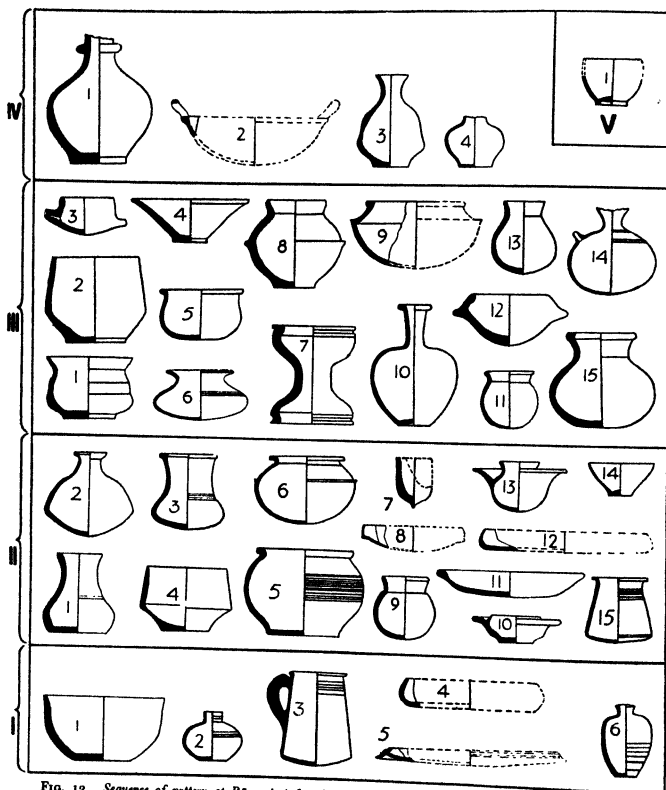
FIG. 12. *Sequence of pottery at Bāngarh (after Goswami): I, late Maurya; II, Śuṅga; III, Kushan and Gupta; IV, Pāla; V, medieval.* Not to scale

Cruciform on plan, with angular projections on the arms, the massive brick temple here originally stood 100 ft. high in three receding terraces (pl. LXXIII)). A thick compound-wall, with a series of one hundred and seventyseven cells on its inside makes up the monastery and encloses the central temple. The entire complex is pre-planned, without subsequent accretions to the main structure, unlike many other ancient religious edifices.

At regular intervals the basement of the structure was provided with niches to take in sixtythree stone images of Brahmanical deities, possibly re-used from an older temple (pl. LXXIV). The upper terraces were faced with one or two rows of terracotta plaques, depicting an exceptionally rich range of themes, consisting of Brahmanical and Buddhist deities, anecdotes from the two Hindu epics, mythology and folklore, birds, animals and foliage (pl. LXXV). Numbering three thousand, these plaques are striking evidence of the contemporary craftsman's skill and genius in plastic art. Architecturally, with its receding terraces the temple formed the prototype of similar class of temples developed in Burma, Java and Cambodia.

The temple belongs to the eighth century, but a copper plate discovered in a clearance here is dated in A.D. 479.[1] Being principally a monastic establishment, the site was poor in small objects of everyday use. The pottery used by the monks dated mostly from the tenth to the twelfth century.

D. MAHĀSTHĀNGARH

The extensive city-site of Mahāsthāngarh in East Bengal is situated on the Karatoyā river, 7-8 miles north of the district town of Bogrā. An inscription of the third century B.C. found here states that a provincial governor was posted in Puṇḍranagara, the name by which Mahāsthāngarh was anciently known.[2] Evidence of continued occupation at the site was supplied by the accidental discovery of Śuṅga terracottas and Kushan coins.[3] But the partial excavation of two of its several mounds carried out in 1928-29[4] revealed structures only from the Gupta period to the eleventh century, the Pāla levels being rich in moulded terracotta plaques of the Pahārpur type.

E. MAINĀMATĪ

Terracotta plaques in Pahārpur tradition were used over a wide area. Ample evidence of it comes from Mainămatī and Lālmāi Hills, 6 miles east of Comilla in East Bengal, where a number of these plaques were discovered in a removal of earth.[5] A regular excavation at the site is likely to reveal a temple-establishment of the Pahārpur type.

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[1] *Epigraphia Indica*, XX (1929-30), pp. 59 ff.

[2] *Ibid.*, XXI (1931-32), pp. 83 ff.

[3] *Jour. Asiatic Soc. Bengal*, XXVIII N.S. (1932), pp. 127 ff.

[4] *An. Rep. Arch. Surv. Ind.*, 1928-29, pp. 88 ff.; 1935-36, pp. 67 ff.; 1936-37, pp. 51 ff. For earlier exploration by Cunningham, see *Arch. Surv. Ind. Rep.*, XV, pp. 104 ff.

[5] T. N. Ramachandran, 'Recent archaeological discoveries along the Mainamati and Lalmai Ranges, Tippera District, East Bengal', *B. C. Law Volume*, pt. ii (Calcutta, 1946), pp. 213 ff.

8. WESTERN AND CENTRAL INDIA

The prehistory of this region has attracted attention for a considerable time past. At the same time, the traditional belief in the sanctity of some towns on the Narmadā and other rivers has invested them with a supposed rather than proved antiquity. But it is only recently that a picture of sequential cultures has started to emerge here.

The Narmadā has sustained habitation from older times than its northern compeer in popularity, the Gangā. The Stone Age and the protohistoric microlithic cultures (above, pp. 57, 60, 64 and 68) were followed here by a historic sequence which falls apparently into three broad phases as at present known (fig. 13).

The first of these phases, dated to *circa* 500-100 B.C., is distinguished by the predominance of a black-and-red ware, an industry which, in fact, comes on the scene earlier with upper microlithic deposits (*circa* 700 B.C.). In upper levels it overlaps with the N.B.P. Ware. But, unlike the southern Black-and-red Ware, it has rarely been found associated with iron but mainly with copper, which makes it considerably early, certainly earlier than its southern analogue of 'megalithic' context (above, p. 110). Dolmens and cists are unknown here, except stone circles near Nagpur[1] and post-cremation burials in urns or pits as at Bahal and Amreli. At the latter place the burials are surrounded by stone circles. At Bahal they have also yielded the black-and-red ware. This ware is sometimes painted with simple dots and lines in white, a peculiarity noticed in Saurāshṭra and as far north as Āhāṛ near Udaipur in Rājpūtānā. The N.B.P. Ware has not yet been reported from Saurāshṭra, but that may possibly be due to inadequate exploration, in view of its otherwise known wide distribution.

A beautiful red polished pottery, imitating the Samian ware and possibly even imported from Rome in some quantity, is the hall-mark of the second phase from *circa* 100 B.C. to A.D. 200 but continues late till *circa* A.D. 500. It may be recalled that Roman coins of various dates between the first and fourth centuries have been reported from several sites in India, including the central region,[2] although they have not yet been obtained in this part in a systematic excavation. Other relics of Roman origin include clay *bullae*, widely distributed,[3] sealings, some bronze vessels and a statuette of Poseidon found at Brahmapurī near Kolhāpur (below, p. 163). The third phase, *circa* A.D. 200-500, is also characterized by the Red Polished Ware, but its quality deteriorates with succeeding times. Āndhra and Kshatrapa coins, and occasionally those of the Kushans and Guptas, are met with in these levels.

A. Ujjayinī and Vidiśā

Among ancient sites in this region known to earliest literary tradition are Ujjayinī (modern Ujjain) and Vidiśā (modern Besnagar), the latter famous for the Garuḍa pillar set up by Heliodoros, ambassador of Antialcidas, king of Taxila, to the court of king Bhāgabhadra.[4] During his father's rule Aśoka is said to have married the daughter of a banker at Vidiśā on his way to take up the office of viceroy at Avanti. These sites

[1] J. H. Rivett-Carnac, 'Prehistoric remains in central India', *Jour. Asiatic Soc. Bengal*, XLVIII (1879), pt. I, pp. 1 ff.

[2] *Ancient India*, no. 2, pp. 116 ff.

[3] *Ibid.*, no. 5, pp. 102 ff.

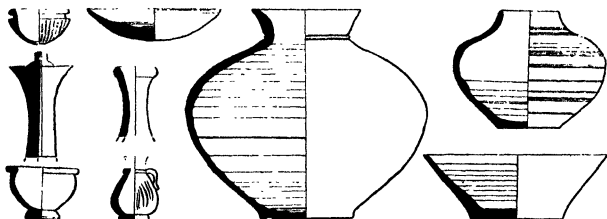
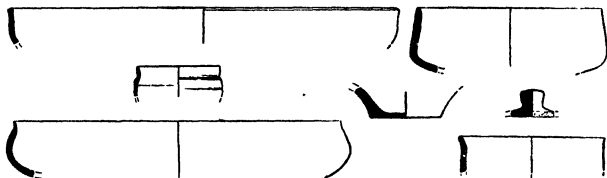
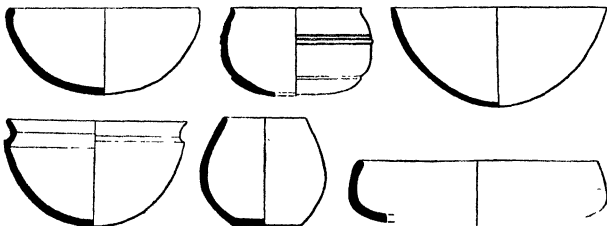
[4] *An. Rep. Arch. Surv. Ind.*, 1908-09, pp. 126 ff.; 1913-14, pp. 186 ff.; 1914-15, pp. 66 ff.

3. RED POLISHED WARE (100B.C.-500A.D.)

2. NORTHERN BLACK POLISHED WARE (500B.C.–100B.C.)

1. BLACK AND RED WARE (700B.C.–100B.C.)

FIG. 13. *Sequence of pottery in central and western India.* ⅛

have not been excavated, except for some superficial work at Ujjain.[1] But the cultural sequence may not be very different here from that of excavated sites. The microliths and the N.B.P. Ware have been reported from both the sites and the occupation apparently continued at least till late Gupta times. At Ujjain, where the ancient town stretches along the Śiprā, remnants of a wooden structure, recalling the palisade at Pāṭaliputra (above, p. 147), have been exposed. Ringed soak-wells are another feature of the town. Among the published photographs of pottery found at Ujjain are some shapes which recall certain north Indian types, particularly those corresponding to fig. 5, 8, 16, 18, and fig. 6, 3 and 10. The punch-marked and cast Ujjain coins, dated between the third century B.C. and first century A.D., found in large numbers in excavation and on surface, confirm the antiquity of the site. Four miles north-east of Ujjain, the mound of Kumhār Ṭekṛi conceals a burial-*cum*-cremation ground of an uncertain date, but certainly prior to the third century B.C., judging from the occurrence of uninscribed cast coins in the upper levels of the mound.

B. SĀNCHĪ

At Vaiśya Ṭekṛi near Ujjain, a mound is suspected to conceal the remains of a *stūpa*. But it is Sānchī and Bharhut which, with their famous *stūpas*, represent the early artistic traditions of the country. At Sānchī the N.B.P. Ware has also been noticed. The earliest monuments here were erected by Aśoka, two of which have been identified, viz., a brick-built *stūpa* and an inscribed pillar with a lion-capital. The original *stūpa* was enlarged and provided with a stone casing in the Śuṅga period (pl. LXXVI), when two other *stūpas* were also constructed. Subsequently, during the Āndhra period, the *stūpa* was provided with its famous carved doorways on all sides (pl. LXXVII). A similar gateway was also added to an adjacent *stūpa*. Additions and enlargements continued to be made to the monuments till the eleventh century.[2]

C. BHARHUT

The famous *stūpa* at Bharhut, of plastered brickwork, has disappeared long ago, but the surviving portions of its carved stone railing are now kept mostly in the Indian Museum, Calcutta, and are held up as typical specimens of Śuṅga sculptural art.[3]

D. PAWĀYĀ

Mention may also be made here of two early sites in the former Gwalior State, although they have not been excavated to any extent. Of these, Pawāyā is identified with Padmāvatī, the ancient capital of the Nāgas. Superficial excavation here has brought to light sculptures going back to the first and second centuries A.D., important among

[1] *Annual Administration Report of the Archaeological Department, Gwalior State*, 1938-39 (1940), pp. 13 ff.; B. C. Law, *Ujjayinī in Ancient India* (Gwalior, 1944).

[2] John Marshall and others, *The Monuments of Sāñchī*, 3 vols. (Delhi, 1940); John Marshall, *A Guide to Sanchi*, 3rd ed. (Delhi, 1936).

[3] A. Cunningham, *The Stupa of Bharhut* (London, 1879); Benimadhab Barua, *Barhut*, 3 vols. (Calcutta, 1934-37).

which is a life-size standing image of Yaksha Maṇibhadra inscribed with his name in characters of the first century A.D.[1] A temple of Gupta date is also worthy of mention.

E. Mandasor

Sondhi, near Mandasor, is famous for the inscribed pillars of Yaśodharman.[2] Mandasor itself was anciently known as Daśapura and was a prosperous town in the fifth-sixth centuries A.D. Trial-excavations here revealed some structures and sculptures of late Gupta times.[3]

F. Maheśwar

Maheśwar, in Nīmāṛ District of Madhya Bharat on the Narmadā, is identified with Māhishmatī, a city founded by king Muchukunda according to Purāṇic tradition and one time capital of Avanti according to Buddhist texts.[4] It was excavated recently by a Joint Universities Expedition organized by the Deccan College Post-graduate and Research Institute, Poona, assisted in one form or another by the Universities of Poona, Baroda and Bombay and the Madhya Bharat Department of Archaeology. Over the proto-neolithic and microlithic cultures (above, pp. 68, 72 and 98) were found here remains of three early historical periods from *circa* 400 B.C. to A.D. 500 and then a medieval Muslim-Maratha occupation. The earliest of the historical periods, *circa* 400-100 B.C., is distinguished by the black-and-red pottery and N.B.P. Ware, silver and copper punch-marked coins and early local coinage. Occasionally microliths are also present, but they may be survivals. At Navḍā Ṭolī, opposite Maheśwar on the south bank of the Narmadā, a *stūpa* of the second period, *circa* 100 B.C.-A.D. 200, came to light. This phase is dominated by the Red Polished Ware resembling the Samian ware. In the third phase, *circa* A.D. 200-500, unrepresented at Navḍā Ṭolī, the Red Polished Ware, presumably imitated, continued in association with early cast coins. The last occupation, of Muslim-Maratha period, is characterized among other objects, by glazed medieval pottery.[5]

G. Nāsik

The Deccan College Post-graduate and Research Institute had earlier explored Nāsik along with some other sites in Mahārāshṭra. Above distinct deposits of palaeoliths succeeded by microliths (above, pp. 60, 67 and 71), the historical remains begin here with the N.B.P. Ware, dated to *circa* 300 B.C., and continue into the early centuries A.D.[6]

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[1] *An. Rep. Arch. Surv. Ind.*, 1915-16, pp. 101 ff.; 1924-25, p. 165.

[2] Fleet, *op. cit.*, pp. 42 ff.

[3] *An. Rep. Arch. Surv. Ind.*, 1922-23, pp. 185 f.; 1925-26, p. 187.

[4] B. C. Law, *Ujjayini in Ancient India* (1944), p. 3.

[5] H. D. Sankalia, 'Excavations in the Narmada valley', *Jour. Maharaja Sayajirao University of Baroda*, II (1953), pp. 99 ff.; H. D. Sankalia and others, 'The archaeological sequence of central India', *South-western Journal of Anthropology*, 9 (1953), pp. 343 ff.

[6] H. D. Sankalia, 'Ancient and prehistoric Mahārāshtra,' *Jour. Bombay Branch Roy. Asiatic Soc.*, XXVII (1951), pp. 99 ff. The palaeoliths were found at Gangāwāḍi, 10 miles from Nāsik, in a pre-microlithic river-deposit.

H. Bahal

A hoard of six hundred and eightyfive silver punch-marked coins discovered in 1943 and the presence of the N.B.P. Ware had attracted attention to Bahal in East Khandesh District on the Girnā river. The site was accordingly excavated recently. Over a microlithic deposit (above, p. 68), succeeded by the use of copper and iron, with which the black-and-red ware is found associated, the historical remains of the site commence with the N.B.P. Ware. The occupation continues to the early Sātavāhana period, characterized by the use of Red Polished Ware, and is succeeded by late Sātavāhana deposits and finally by medieval remains. On the opposite bank of the river, some post-cremation burials in urns and pits were also discovered. These burials were apparently post-microlithic but preceded the use of copper and iron. They yielded chalcedony blades, carnelian beads and the typical black-and-red pottery.[1]

I. Amreli

While the burials at Bahal are obviously early, at Amreli in Kāthiāwāḍ peninsula of Bombay State, certain pit-circles for post-cremation burials were dated to *circa* second century A.D. The entire occupation here dates from the first century B.C. to the fourth century A.D. (pl. (LXXVIII). The Red Polished Ware resembling the Samian ware persists through this whole span and is interlocked with dated Kshatrapa coins and terracotta figurines and sealings. Six miles north-east of Amreli, at Moṭā Machiālā, this Red Polished Ware overlies the painted pottery familiar to us from Rangpur and now taken as representing a post-Harappā culture.[2]

J. Tripurī

Tripurī, the capital of the Kalachuris in early medieval times, was recently excavated by the Saugor University. Here again, over a microlithic culture (above, p. 70), the historical remains begin with the N.B.P. Ware (fig. 2, 4, 9, 12, 14, 20 and 21) and punch-marked coins, above which lie the local Tripurī issues of about the third century B.C. The site was occupied by the Buddhists about the second century A.D., the corresponding levels yielding coins of late Sātavāhanas and the Indo-Roman Red Polished Ware. The latest occupation is dated to the fourth century A.D., the scattered remains of the Kalachuris having remained uncleared so far.[3]

K. Baroda

The University of Baroda has recently excavated at two adjacent sites in and near Baroda on the Viśvāmitrī river. These two sites, the Medical College area and the neighbourhood of the village of Akoṭā, revealed at the bottom a microlithic culture which had been swept away by floods. The next occupation started about the first century A.D. and continued almost uninterrupted till *circa* A.D. 1600. The early historical period,

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[1] Information from Shri M. N. Deshpande.
[2] Information from Shri S. R. Rao.
[3] Information from Dr. M. G. Dikshit.

from *circa* A.D. 100 to 600, is characterized by the Red Polished Ware, associated with which was found a Kshatrapa coin. A Roman bronze handle had earlier been found here, and in the excavations were discovered two clay seals in Graeco-Roman style. Later on Akoṭā was known by the name of Aṅkoṭṭaka according to inscriptional evidence.[1] A large number of Jaina bronzes attest to its importance in medieval days.

L. Brahmapurī

On the western outskirts of the city of Kolhāpur the mound of Brahmapurī was excavated by the Deccan College Post-graduate and Research Institute, Poona, in 1945-46,[2] after a bronze statuette of Poseidon, the Roman god of sea, had accidentally come to light there. The beginnings of this city may go back to *circa* 200 B.C. or earlier, as indicated by the presence of the N.B.P. Ware. It is, however, from the second century A.D. that there is firm evidence of flourishing brick-built houses and such articles of common use, as coins, beads, bangles and iron implements. Roman contact is further confirmed by a bronze vessel and clay *bullae* made in imitation of Roman prototypes. With possible gaps of short durations, the occupation continued here till the fifteenth-sixteenth century.

In the lower Sātavāhana deposits of the early centuries A.D., the salmon- or red-surfaced Roman ware, imported or imitated, and a black-slipped ware are the characteristic ceramic industries, with sporadic occurrence of the N.B.P. sherds. There are also some pots entirely made of kaolin or bearing slip of that material. The late pottery, of *circa* A.D. 400-900, is sophisticated in form and has excellent fabric and finish. There is also in these levels a substantial percentage of decorated pottery, both impressed and incised. In the eleventh-twelfth century levels of the Śīlāhāra rule, a deterioration sets in in the general quality of the pottery, which becomes particularly marked in the pottery of the Bahmanī period (*circa* fifteenth-sixteenth century). The clay now used is porous, and the pots are burnt red or grey to black. The slips used also vary between grey to jet black.

9. THE DECCAN AND SOUTHERN PENINSULA

The trail that the Roman trade left in southern India has played the same rôle in determining the chronology of indigenous products as the Greek contact in the north-west. Certain Roman wares, imported or closely imitated, were first recognized at Arikameḍu, near Pondicherry; subsequently, one of these, the so-called rouletted ware, has been traced over a wider region, so that the local industries associated with it have automatically acquired a reasonable chronology (fig. 14). Roman communication with the south is further confirmed by numerous finds of Roman coins.[3]

The microlithic and neolithic cultures in the south (above, p. 71) were succeeded by the iron-using megalithic culture. A distinct Black-and-red Ware, manufactured by inverted firing, is characteristic of this region, and at Brahmagiri has been dated to *circa* 200 B.C. to A.D. 50 (above, pp. 107), although it might have originated considerably earlier. The next phase in the cultural evolution of the south is marked by a yellow- or white-painted russet-coloured pottery, commonly called the 'Āndhra' ware. The Sātavāhana

[1] B. Subbarao, *Baroda through the Ages* (Baroda, 1953).
[2] H. D. Sankalia and M. G. Dikshit, *Excavations at Brahmapuri* (*Kolhapur*), *1945-46* (Poona, 1952).
[3] *Ancient India*, no. 2, pp. 116 ff.
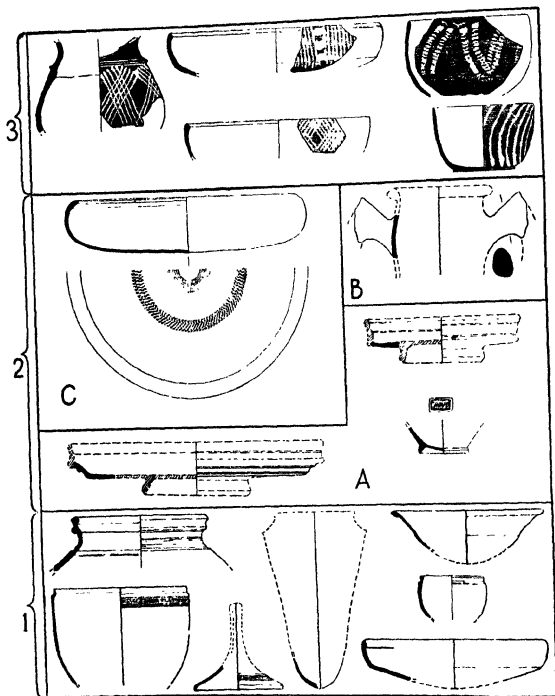
FIG. 14. *Sequence of pottery in south India: 1, Black-and-red Ware* (circa *300 B.C.* (?)-*A.D.50; 2 A, Arretine ware* (*A.D. 20-50*)*; 2 B, amphora* (*first-second centuries A.D.*)*; 2 C, rouletted ware* (*first-second centuries A.D.*)*; 3, 'Āndhra' ware,* (circa *A.D. 50-300*). Not to scale

age, from *circa* A.D. 50 to 300, is its duration, and associated with it occur Roman coins, local Āndhra issues and the rouletted ware.

Our knowledge of the commoner industries of the post-Sātavāhana periods is still very vague and imperfect, almost all that we know of these times being confined to the evolutionary phases of sculptural and architectural traditions as observed in *stūpas* and temples and other religious establishments. The Chinese celadon is known, however, to make its appearance in the south about the ninth century and to continue till late medieval times. Of the late medieval towns, mention may perhaps be made of Hampī, the capital of the Vijayanagara kings from the fourteenth to the sixteenth century.[1] Fortifications, palaces, and temples make up this interesting town, a unique feature of which was an arrangement to supply water to royal apartments through stone-built channels. Limited excavation carried out in a part of the fortified area revealed ruins of palaces of the Vijayanagara period.

A. Arikameḍu

Finds of certain beads and gems of Roman make at Arikameḍu, 2 miles south of Pondicherry, had attracted the attention of the French archaeologist G. Jouveau-Dubreuil in 1937. Subsequently the French authorities carried out a superficial excavation there. In 1945, however, the site was explored by the Archaeological Survey of India on a scale large enough to give a reasonable picture of the nature of the ancient settlement, including its contact with the Roman world[2] (pl. LXXIX).

A large warehouse built about A.D. 50 came to light in one of the two sectors excavated; in the other were noticed four levels of successive structures, which included a courtyard with two small tanks, both believed to have been used in the preparation of muslin exported outside India (pl. LXXX).

It is, however, the broken bits of pottery which had a significant story to reveal: for Roman ware of two categories occurred here almost through the entire span of occupation, from the close of the first century B.C. to A.D. 200. These were the two-handled amphorae, intended to contain wine or oil, and the smooth-surfaced wide dish with concentric bands of rouletted pattern. The pattern and technique of the latter were definitely importations, though not necessarily so the specimens found. A third ware was more limited in duration, between A.D. 20 to 50. This is a red-glazed ware, sometimes stamped with the name of the potter and commonly called the 'Arretine' ware from the Latin name of Arezzo (Arretium), which was famed contemporaneously for producing a high quality ware of this class. Among other imported objects, including earlier finds, were Graeco-Roman gems, some intaglioted, a red ware Roman lamp and Roman glass bowls, occasionally 'pillared' in mould.

The earliest local ware at Arikameḍu is predominantly grey with some proportion of red ware, but the latter shows a progressive increase till it outnumbers the former. Finally a process of devolution sets in, and the red ware gets cruder and cruder. In the pre-Arretine layers some of the pots have basket-impressions, graffito-decorations or incised designs of the simplest kind. The Black-and-red Ware usually associated with megaliths is also present, but in very limited quantities.

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[1] A. H. Longhurst, *Hampi Ruins* (Delhi, 1933).

[2] R. E. M. Wheeler, A. Ghosh and Krishna Deva, 'Arikamedu: an Indo-Roman trading-station on the east coast of India', *Ancient India*, no. 2, pp. 17 ff.

Arikameḍu was obviously an Indo-Roman coastal trading-station, probably identical with Podouke mentioned in the *Periplus of the Erythraean Sea* (*circa* A.D. 60-100). It ceased to be active after *circa* A.D. 200 and was thereafter subjected to spoliation in medieval times, as indicated by stray finds of Choḷa coins and fragments of Chinese celadon ware.

B. Brahmagiri

At Brahmagiri, in Chitaldrug District of Mysore State, identified with the town of Isila mentioned in Aśoka's rock-edict at the adjacent village of Siddāpur and excavated by the Archaeological Survey in 1947,[1] the results obtained at Arikameḍu were utilized for working out the date of the 'megalithic' Black-and-red Ware underlying the rouletted ware. There was a sequence of three cultures here. The lower two, the Stone Age and megalithic cultures have been dealt with above (pp. 67, 77 and 101). The uppermost culture, dating from the middle of the first century A.D., overlapped with the megalithic in the lower levels but was all the same distinct, characterized by the use of a sophisticated pottery, often 'decorated with varieties of simple rectilinear or slightly curvilinear patterns in a paste of kaolin or lime under a wash of russet-coloured ochre'.[2] This has acquired the name of 'Āndhra' ware owing to its occurrence in the Āndhra country during the rule of the Sātavāhana kings.

C. Chandravalli

A limited excavation was also carried out at Chandravalli near Chitaldrug simultaneously with the work at Brahmagiri.[3] The lower levels here brought out the typical Black-and-red Ware, and the upper levels showed the same yellow-painted Āndhra pottery as at Brahmagiri, interlocked with specimens of the rouletted ware and denarii of Augustus (23 B.C.-A.D. 14) and Tiberius (A.D. 14-37). Coins of the Sātavāhanas were comparatively few at Brahmagiri, but they were plentiful at Chandravalli.

The sequence observed at Brahmagiri and Chandravalli is valid for a wider area northwards including Maski[4] and Pakhlihal[5] in Raichūr District and Koṇḍāpur in Medak District[6] in Hyderabad State. The published reports of these excavations are somewhat confusing, recounting mainly the wealth of antiquities recovered. It seems, however, that at all these places vestiges of neolithic and megalithic cultures are succeeded by relics of the Āndhra period, including coins, terracottas and beads. At Koṇḍāpur, among numerous coins was also found a coin of Augustus (23 B.C.-A.D. 14).

[1] R. E. M. Wheeler, 'Brahmagiri and Chandravalli 1947: megalithic and other cultures in Mysore State', *Ancient India*, no. 4, pp. 180 ff.

[2] *Ibid.*, pp. 236 f.

[3] For earlier excavations here by the Mysore Archaeological Department see 'Excavation at Chandravalli (Mysore State)', *Supplement to Annual Report of the Mysore Archaeological Department for the year 1929* (Bangalore, 1931).

[4] *An. Rep. Arch. Deptt. H. E. H. Nizam's Dominions*, 1935-36 (1938), pp. 22 ff.

[5] Information from Dr. P. Sreenivasachar.

[6] G. Yazdani, 'Excavations at Kondapur, an Andhra town' (*circa* 200 B.C. to 200 A.D.), *Annals of the Bhandarkar Oriental Research Institute*, XXII (1941), pp. 171 ff.; M. G. Dikshit, *Some Beads from Kondapur* (Hyderabad, 1952); P. Sreenivasachar, *Kondapur* (Hyderabad, 1953).

D. Sengameḍu

Sengameḍu on the Maṇimuktā-nadī near Vriddhāchalam in South Arcot District, excavated recently by the Department, is one of the few known habitations of the authors of megaliths (pl. LXXXI). It was significant to find here also the specimens of rouletted ware in the upper levels of the Black-and-red 'megalithic' Ware, thus confirming the general pattern of successive cultures in the south.[1]

E. Amarāvatī

In the Āndhra country, a strong tradition of Buddhist art and culture grew up between the third century B.C. and third century A.D., manifesting itself in the construction of several *stūpas*, *chaityas* and *vihāras*, particularly along the Krishṇā. The *stūpas*, constructed of brick and plastered, stood on a raised circular podium with a rectangular projection on each cardinal point. They were mostly built on a wheel-pattern, with a central hub sending 'spoke'-walls and a circular casing taking the place of the rim. The space between the walls was filled with earth, and the outer face of the casing was decorated with carved stone panels representing scenes from Buddha's life.

The *stūpa* at Amarāvatī[2] was razed to the ground by a landlord in the closing years of the eighteenth century, but its plan was laid bare in the early years of the present century. Some of its best sculptures have survived in different museums in India and abroad. The site is of interest, however, for other, and more potential, reasons as well. For below the Buddhist settlement here lie megalithic stone circles, and on the surface have been noticed the rouletted ware and a single stray N.B.P. sherd,[3] both important landmarks in Indian archaeology. About 1½ miles west of the *stūpa* lie the remains of a township, probably identical with Dhanakaṭaka of early inscriptions. Once this site is excavated, it will throw valuable light on southern contacts with the north, evidenced by the recovery of the N.B.P. Ware.

F. Nāgārjunakoṇḍā

Stone circles also exist at Nāgārjunakoṇḍā, 65 miles west of Amarāvatī. But the place is renowned for the extensive remains of Buddhist buildings, which were excavated during 1927-31 and 1938-40.[4] The excavations exposed a main *stūpa*, some smaller *stūpas*, *chaityas*, *vihāras* and *maṇḍapas* (pl. LXXXII). The *chaityas* here are apsidal, and the rectangular *vihāras* or monasteries include within their precincts an apsidal temple and a *stūpa*. The remains of a long riverside wharf, presumably covered with a wooden roof, were also found.

The numerous inscriptions found at Nāgārjunakoṇḍā indicate that the settlement was built in the second-third centuries under the patronage of Ikshvāku rulers, particularly

[1] Information from Shri N. R. Banerjee.

[2] J. Burgess, *The Buddhist Stupas of Amaravati and Jaggayyapeta* (London, 1887); *An. Rep. Arch. Surv. Ind.*, 1905-1906, pp. 115 ff.; 1908-09, pp. 88 ff.

[3] Information from Shri A. Ghosh.

[4] A. H. Longhurst, *The Buddhist Antiquities of Nāgārjunakoṇḍā, Madras Presidency*, Mem. Arch. Surv. Ind., no. 54 (1938); T. N. Ramachandran, *Nāgārjunakoṇḍā 1938*, Mem. Arch. Surv. Ind., no. 71 (1953). References to the *An. Reps. Arch. Surv. Ind.* have been omitted.

their queens. The city-site adjacent to the religious settlement was called Vijayapurī. A palace-site at Nāgārjunakoṇḍā has been identified but not excavated.

Like the Amarāvatī *stūpa*, the site has yielded over five hundred beautifully executed stone bas-reliefs. The coins include a gold coin of the Roman emperor Hadrian (A.D. 117-138) and several Āndhra lead coins.

Among other Buddhist settlements in the Āndhra country, not necessarily of the same size or importance as Amarāvatī or Nāgārjunakoṇḍā are Jaggayyapeṭa,[1] Śālihuṇḍam,[2] Guḍivāḍa, Ghanṭaśālā and Bhaṭṭiprolu.[3]

10. THE SOUTH-EAST REGION

The area between the Āndhra country in south and Bengal in east is exceptionally rich in temples and sculptures of medieval times. But only one site here has so far been excavated. It would be hazardous to generalize for the entire region from this single excavated site, viz. Śiśupālgarh, near Bhuvaneśwar in Orissa, but it is not fortuitous that we should find here, owing to its particular geographical position, an infiltration of characteristic ceramics both from the north and south, viz., the N.B.P. Ware and rouletted sherds.

A. Śiśupālgarh

The ancient town here, possibly identical with Tosali of Aśoka's edicts at Dhauli, 2 miles south of it, and with Kaliṅganagara of Khāravela's Hāthigumphā inscription at Khaṇḍagiri, 6 miles north of it, is enclosed within a rectangular rampart with two gates on each side. The excavation here[4] was limited to three areas: part of the inhabited town in the centre, a gateway on the west and a section across the massive defence wall.

The houses in the town were built with bricks or cut laterite slabs, and the streets seem to have been laid on a chess-board pattern (pl. LXXXIII). The western gateway, built of massive slabs of laterite, was flanked by L-shaped arms projecting outwards which could be ascended by regular flights of steps (pl. LXXXIV). Two doorways, outer and inner, gave access to the town through the flanks. A third narrow passage, passing through the northern flank close to the inner doorway, presumably restricted the entry when the main doorways were closed.

The site was first occupied about 300 B.C., but the original rampart, of heaped earth, was not built till a hundred years later, when, perhaps quite by coincidence, a black-and-red ware made its first appearance here. As we find another ceramic here from the south, it is reasonable to regard this ware also as an extension from the same region rather than from western and central India, where also an analogous pottery exists. In the second phase a 4-6 ft. thick layer of laterite was laid on the earlier earthwork. Two brick walls, 26 ft. apart, with débris and mud-filling in between, marked the third phase, while, finally, when the earlier revetment had partially collapsed, a new revetment was built with stepped exterior.

[1] J. Burgess, *op. cit.*

[2] *An. Rep. Arch. Surv. Ind.*, 1919-20 (1922), p. 30; T. N. Ramachandran, 'An inscribed pot and other Buddhist remains in Śālihuṇḍam', *Ep. Ind.*, XXVIII (1949-50), pp. 133 ff.

[3] A. Rea, *South Indian Buddhist Antiquities* (Madras, 1894).

[4] B. B. Lal, *op. cit.* (1949).

The total occupation of Śiśupālgarh has been divided into three periods. The formative period of the settlement, *circa* 300-200 B.C., shows singularly plain pottery of a dull-grey to terracotta-red surface. No structural remains of this period came to light. The next period, with impressive structures of laterite slabs, may be divided into two phases, the earlier of which, *circa* 200 B.C.-A.D. 100, shows a sophistication of the local pottery combined with the introduction of decorations and the evolution of a bright red polished ware. At the bottom of this period occurs the Black-and-red Ware, while the late levels occasionally yield fragments of the rouletted ware, which was first identified at Arikameḍu (above, p. 65). A few sherds of the N.B.P. Ware, probably nothing more than survivals, occur in late levels of this phase. In the latter phase of this period, *circa* A.D. 100-200, the bright red ware deteriorated into a plain red ware with an ordinary wash, and the decorative patterns became crude. Glass bangles, clay *bullae* imitating Roman coins, a silver punch-marked coin and a copper coin of Huvishka were also found in the deposits of this period. In the last period, *circa* A.D. 200-350, the devolution of the bright red ware to a thin, ineffective red or yellowish-red pottery was complete. A gold coin, copied from the coinage of the Kushan king Vāsudeva, and some Puri-Kushan coins came from this period. A large number of terracotta ear-ornaments obtained here show their beginnings in the second period, but it is in the last period that they became extremely abundant and characteristic of the site.

PRESERVATION OF MONUMENTS

By T. N. Ramachandran

CONTENTS

1. INTRODUCTION

THE ancient monuments of India constitute her cultural heritage. A variety of causes, not to speak of age and age-long neglect, has combined to produce a decay and devastation unparalleled in the history of any country. The natural causes may be examined. The eastern half of India and her west coast have thick vegetation brought on by tropical rainfall, Assam having the world's record for heavy rainfall.

Thus, a monument cannot be left to itself after the repairs but needs continuous vigilance, which is vouched for it by a system of 'annual repairs' in the manner of jungle-clearance after monsoons, resetting of stones and other materials loosened by the rains or by the sprouting of tree-roots. The heavy rainfall also produces moss or lichen enough to disfigure a monument. Monuments like the Five Pagodas (Rathas) of Mahābalipuram in south India and the Sun temple of Konārak in Orissa, which are near the sea, are badly affected by salt-action, as the salt-laden air penetrates into their surfaces and wears them out. The case is, however, different in the interior of India, particularly in the north-west, where saltpetre of the soil, in the absence of plant-life, wears out brick monuments and reduces the bricks to dust. Another natural cause, which, fortunately, is not normal, is the occasional occurrence of earthquakes in the lower Himalayan regions of India. If, for example, we take more recently recorded earthquakes, we may notice that the Kāngrā earthquake of 1905 brought down the Nagarkoṭ monuments in Kāngrā, Panjab. The Assam earthquakes of 1918, 1945 and 1950 brought down a number of monuments in Śibsāgar District, including the Śibdol temple at Śibsāgar and the Gargaon palace, Nazira. The Bihar earthquake of 1934 was another occurrence of sufficient acuteness that caused injury to some monuments in Bihar. It goes without saying that a number of unrecorded earthquakes of olden days must have spelt ruin to many a monument.

Another destructive factor was human agency. Religious bigotry of one community often led to the disfiguring of monuments of its rivals. The vandalism of some of the invaders from the north-west is too often recorded by historians to need any repetition here, and the fact remains that several monuments have suffered as a result of iconoclastic zeal, fad, fancy and frenzy of the invaders.

Quarrying for bricks and stone for road-metal and building purposes was another potent cause of destruction for monuments. The *stūpas* of Sārnāth, of Bharhut and of Amarāvatī and the ruins of Harappā are a few on record where the monuments were abused either by being rifled of their contents, robbed of their stones for building purposes, burnt into lime or utilized for ballast for laying rail. Medieval, later Mughul and other forts and *maḥals* were utilized during wars in the eighteenth and nineteenth centuries and even during the two recent World Wars for housing troops, with the result that not only alterations but sometimes demolitions of monuments, partial or complete, took place, and it was not without great difficulty, and sometimes arbitrarily, that the military area could be demarcated from the archaeological area in some of these forts. There are also cases of accretions and alterations in ancient temples and mosques effected in public interest (e.g., schools, inspection-bungalows, rest-houses) to suit modern taste and utility. Indeed, it takes one's breath away to note that in 1828 the Government of India under Lord Bentinck were seriously considering a proposal to dismantle the Tāj Maḥal for the value of its marbles and that this proposal received the active attention of the Government for nearly seven years. While agriculture was generally instrumental to denudation and, in some cases, levelled down ancient sites, hydro-electric schemes and irrigation-projects, the latter of recent times, have acted detrimentally to the ancient monuments.

Alexander Cunningham started a systematic survey of ancient monuments in 1861. Twenty years later, H. H. Cole was appointed to preserve the monuments from decay. From then onwards the work of preserving the monuments became a permanent State responsibility, while prior to this the conservation-activities were only sporadic, such as that at Tāj Maḥal in 1808, Fatehpur Sīkrī and Sikandara in 1815, Quṭb Mīnār in 1826, Ahmednagar in 1867 and monuments of Thatta in 1885. Between 1881 and 1885 Cole devoted his attention to a large number of monuments, on the repairs to which he advised

the local administrations.[1] The monuments included the ones at Bījāpur, Ahmednagar and Kārle in west India; Mahābalipuram, Tiruchirāpalli, Kānchīpuram, Tanjore, Kumbhakonam and Madurā in south India; Sānchī and Gwalior in central India; Mt. Abu, Ajmer, Mewār, Agra and Delhi in north India; and Lahore and the Yusufzai land in north-west India.

In 1885 the central organization for preservation of monuments ceased. The listing of the monuments, which had started in 1883, continued, however, under the local administrations.

The Golden Age for ancient monuments and their preservation was ushered in by Lord Curzon, who appointed (Sir) John Marshall as the Director General of Archaeology in 1902 and passed the Ancient Monuments Preservation Act in 1904. The Ancient Monuments Preservation Act was passed 'to provide for the preservation of the ancient monuments and for the protection and acquisition in certain cases of ancient monuments and of objects of archaeological, historical or artistic interest'. Large-scale repairs were forthwith undertaken.

2. ORGANIZATION

In the early days of the working of the Ancient Monuments Preservation Act, the number of 'protected' monuments under it was limited, being restricted only to monuments of sufficient note. As time passed on, the list grew in bulk as a result of fresh surveys, and with the integration of the Indian States in and after 1947, the total number has risen to upwards of three thousand and five hundred, which are maintained by the Government of India through its Department of Archaeology under a scheme illustrated below.

Government of India (Ministry of Education)

Directorate General of Archaeology in India (consisting of the Director General, Joint Director General and Deputy Director General)

Superintendents and Assistant Superintendents of nine Circles	Archaeological Engineer	Archaeological Chemist and Assistant Archaeological Chemists
Conservation-staff (consisting of conservation assistants, sub-overseers, photographers, draftsmen, foremen, etc.)		Preservation-staff (consisting of technical assistants, preservation assistants, photographers, draftsmen, etc.)

For effective administrative control and facility of conservation-work, the monuments of India, originally grouped into five Circles and later on oriented into seven, are today divided into nine, as indicated in the map on page 47.

While there have been cases in which the people have not sufficiently co-operated in the task of the preservation of monuments, public interest has been, on the whole, increasingly manifesting itself, and the preservation of monuments has become at once a matter of importance alike to the scholar and the intelligent public. In recent years it has acquired a new value.

[1] H. H. Cole, *Preservation of National Monuments*, 18 pts. (Simla-Calcutta, 1881-85).

With the growth of tourism, monuments have become the *raison d'être* for motor, rail, bus and boat tours in the country. The existence of ancient monuments in a village, e.g. Ajaṇṭā, or a town, e.g. Agra, is a priceless heritage and is often responsible for placing the name of the village and town on the map of the world. They are the attractions which invite visitors, foreign and inland, curious and casual, every year. As these monuments form part of our history and tradition, they are the links between the past and the present. It goes without saying that they should be and are, looked after with the utmost care, devotion and affection.

3. GENERAL PRINCIPLES OF PRESERVATION

It is not our endeavour to detail here the numerous measures carried out by the Archaeological Survey of India and similar other organizations in India, as in Hyderabad and Mysore, for the preservation of ancient monuments. Works of an annual routine nature, such as clearing jungle, repairing cracks, making good missing parts, are not described here, though they are vital for the preservation of the monuments. The principles of preservation, followed by a few conservation-measures of outstanding interest and of large-scale programme, are alone briefly described in the subsequent pages.

Since the passing of the Ancient Monuments Preservation Act, 1904, the Department of Archaeology has been engaged in a long-period programme of preservation of ancient monuments and sites throughout India. Though preservation, not restoration, has been the rule, deviations from this rule were sometimes necessary, particularly at the initial stages. For example, a monument may have decayed to the point at which extensive falls have already happened and the fallen parts may still be where they fell. Partial restoration or pinning up may be permitted to secure parts of the fabric likely to collapse, or even some protective cover or roof may be provided. When a roofing is found necessary, the evidence of the original design is invariably followed. For partial rebuilding new material is not necessary, as the fallen débris on the site itself will provide the needed material. Comparatively modern accretions are noticed in most ancient monuments when they come under the charge of the Department. If they are without any purpose and obscure the original plan, it is the practice to remove them and to provide any material support which harmonizes with the old fabric. In such cases a record is kept of the work done.

The fifty years' experience of the Department in maintaining monuments of various periods and materials has enabled it to enunciate some broad principles of preservation which may be of general interest. They were embodied in a Conservation Manual issued first in 1907 and again in 1924 by Sir John Marshall and by periodical staff memoranda of the Directors General.

The treatment of a monument aims at (1) its preservation without disfigurement or alteration of its character; (2) its maintenance in a proper and attractive condition; (3) the complete examination of its remains and documentary evidence concerning it; and (4) the preparation of monographs, guide-books and reports, so that its historical and artistic interest may be brought home to the scholar and the visitor and may rouse general interest in the past relics of the country.

Much ingenuity, care and patience are needed for the successful preservation of monuments. This will be readily admitted if one goes round India and looks at the variety of the monuments ranging from the prehistoric burials, early *stūpas* and temples down to mosques, forts and *maḥals* of the eighteenth century.

While the factors responsible for the dilapidation of the monuments may be various, e.g., the action of wind and weather, the failure of parts of the building through faulty construction or wilful damage, disintegration of mortar or displacement of masonry by vegetable growths and tree-roots and subsidence of foundation, each malady has its own remedy, the one different from the other. The visitor to a conserved monument can have little idea of the amount of work which might have been necessary to preserve it, for unlike other architectural works or modern buildings, the success of conservation depends upon the measure of its restraint and invisibility. *Restraint* is indicated by the control of repair-material foreign to the monument; by *invisibility* is meant that this foreign material is hidden from the view of the spectator.

A. Vegetation: its effects and removal

Owing to heavy rainfall and special monsoonic conditions, the ancient monuments of India generally become the home of vegetation and undergrowth. The first code for rigid observation in conservation is that all destructive vegetation must be removed, as otherwise very serious damage may be caused by the unchecked growth of plants on buildings. The Indian *pipal* and banyan in particular are the most destructive, for they share with the cider, ash and sycamore of Europe large root-growths which penetrate long distances into the masonry.

The growth of such vegetation is rapid and persistent, for its tendrils penetrate into the crevices, loosen and dislodge stones and often part as under sections of masonry, particularly face-work with weak and insufficient bonding with the core of the wall. Plants create fractures, enlarge those already existing and eventually lead to the complete disintegration of the structure.

The roots and tendrils of some plants and mushrooms draw their nourishment from lime-mortar, causing it to break up and lose its virtue. As the roots expand, disintegration is accelerated, resulting in easy penetration of water and vegetable-matter, thereby augmenting the sustenance upon which it thrives.

If the walls of a building are thickly clad the vegetation should first be clipped back. This will enable a closer examination to be made, so that the extent of any damage to the wall may be ascertained before cutting large stems.

All stems should be cut at convenient places above the roots. If the root is growing in the ground, it should be grubbed up at once, but if it springs from the wall, it should be killed by pouring a corrosive acid into holes bored into the stump. When the plant-growth is withered it can be removed easily, but care should be exercised to avoid dislodging any loose masonry. By cutting the withered stems around and tying a rope to the centre, the plant (banyan or *pipal*) can usually be pulled off in one operation.

Saplings and small shrubs can usually be removed without disturbing any large part of the masonry, but where they are large they should be cut off as near the roots as possible and the stump killed. Subsequently the decayed roots can be removed more easily. When treating masonry affected in this way, care should be taken to see that all decayed roots and vegetable-matter are completely eradicated.

B. Excavation and laying out of the site

Many monuments are in ruins and have stood in a neglected state for a long period, and the original ground or floor levels are covered, sometimes many feet deep, with fallen

débris and accumulated soil. The removal of this accumulation is a necessary part of the work of preservation, for thereby not only is the site restored to its original level but buried walls and foundations are exposed, revealing quite often the complete lay-out of the monuments.

Where walls have been destroyed, if foundations or other evidence remain to indicate their past orientation, their lines are marked out on the surface with stones or other suitable material. Where more than one period of work exists, each period is to be indicated in a different manner. Remains of pavements, if visible, are always carefully preserved. The work of consolidation may be taken to be complete when all débris and surplus soil have been removed and the site is turfed or sown with grass-seeds at the original levels.

C. Repairs and consolidation of masonry

Masonry in a good state of preservation should be left untouched. No defective masonry which can possibly be secured *in situ* should be taken down. If it is necessary to introduce new material on the surface to support overhanging portions of the structure, it should be similar in all respects to the existing one, whether face-work or broken core. Pointing should match as far as possible the texture, colour and general appearance of the old work. Disfiguring modern pointing should be removed. Cement-pointing should be avoided, for it is detrimental particularly when applied to soft stone or brick, for, being hard, non-resilient and even non-absorbent, it does not react to atmospheric variations as favourably as the stone or brick with which it is in contact. If hard pointing is employed, the physical action causes rapid weathering and disintegration of the softer stone or brickwork. Many cases of stone-decay have been directly traceable to a porous stone being pointed with impervious mortar. In such cases both saturation and evaporation are confined to the stone, whereas the process should be evenly distributed over stone and pointing.

Where the original pointing was struck off flush with the face of the masonry and the mortar has weathered back and the edges of stone or brick have become rounded off, a 'tight' joint is obtained by the surface of the pointing being slightly recessed, so that the mortar does not spread over the rounded edges. If the joint is filled up to the surface of the stonework, a thin skin of mortar is spread over the edges of adjacent stones. This skin has no hold on the surface and in course of time flakes off. If, on the other hand, the stone or brick is of a soft nature and weathers easily, a pocket is formed behind the skin of mortar; this pocket becomes big by wind-erosion and holds moisture enough to cause deterioration of the stonework.

D. Materials

Sand used for mortar should be of a type similar to that employed in the old walls of the monuments. On the whole, it should be clean, sharp and as coarse-grained as is permissible to match the original work.

Lime should be blue lias or other good hydraulic lime, ground and delivered in bags. Should the lias lime available prove uncertain in its setting properties, a dehydrated lime may be used.

Lime-mortar should be prepared by mixing lime and sand in the proportion of 2 parts of lime to 5 parts of sand in a dry state on a boarded platform. The mixture is

allowed to stand until the lime cools off and is then worked up with a shovel with a minimum quantity of water.

Cement (such as Portland cement), as understood today, was not used in Indian monuments and hence is not discussed here. But when used, it should be invisible or match the colour of the fabric.

E. Methods

(i) *Raking out joints*

Joints should be raked out to remove dirt and loose mortar. They should then be thoroughly washed with clean water by means of a hose or garden-syringe. Care should be taken to see that masonry and brickwork are well wetted before pointing is attempted.

(ii) *Filling joints*

Joints should be filled thoroughly with mortar and consolidated by pressing in with appropriate tools. There should be no voids, and the mortar must adhere firmly to each side of the joint. Superficial pointing is useless as it is not durable.

(iii) *Finish of pointing*

New pointing should match the colour and texture of the old work. After the joints have been filled and compacted, a slightly roughened effect can be produced either by the use of a jet of water or a garden-syringe or by stippling with a bristle-brush. The jet must be employed with care and discretion, as otherwise a strong jet has a tendency to scour the mortar. The bristle-brush method is to be preferred, as it assists in tightening the joint, besides leaving a roughened or weathered surface. During the hot weather new pointing must be kept damp. Pointing should be avoided during the frosty weather, but if it becomes unavoidable it must be thoroughly protected. It is not always necessary to point every open joint in a wall, for very often the mortar may be weathered back from the surface of the stone but may be still sound and hard in the joint. Unless, therefore, the mortar has receded more than ½ in. in depth, there is usually no need to fill up open joints.

(iv) *Wall-tops*

Wall-tops should be waterproofed to prevent percolation of moisture into the heart of the wall. The upper courses of stone, which are usually loose with the mortar disintegrated should be lifted, cleaned and re-bedded. The joints between the stones should be finished, so that water does not stand on the wall-top. If the wall-top presents an uneven sky-line, it is good for the wall and should be preserved, but pockets which may hold water must be avoided.

British experts advise in certain circumstances the provision of small cess-pools at the lowest points of the wall-top. A rain-water pipe of lead, say 2 in. in diameter, can be embedded in the heart of the wall. This is best done by withdrawing the face-stones, putting the pipe in position and then replacing the face. The pipe should be cleaned out

both at the top and at the bottom. The provision of galvanized wire-guards will prevent choking with leaves, etc.

In order to ensure waterproofing of the wall-top, the mortar should be of lime gauged with cement in the proportion of 1 part cement to 4 or 5 parts of lime. Or, if the stone is of a hard texture, cement-mortar may be used, the mixture being in the proportion of 1:4 (1 part cement to 4 parts of sand).

(v) *Displaced masonry*

Masonry face-work which has bulged should be taken down and the stones rebedded in their original position. The stones should be numbered for subsequent identification. Stone dressings to openings, when displaced by vegetation or other causes, may be similarly treated.

Clamps or ties should be of non-corrosive metal.[1] In no circumstances should iron or steel be used except as reinforcement for concrete.

Walls with pronounced 'bow' can be made strong by the internal insertion of reinforced concrete beams. A trench is formed in the wall-head to receive the beam, which is concealed in the core-work. In high walls additional beams are inserted at a lower level by withdrawing the face-work, cutting recesses for the beam in short lengths and replacing the face-stones when the concrete has set. Provision should in such cases be made for the appropriate connexion of the reinforcements uniting each section.

Underpinning is necessary where a structure is in danger through settlement. This is usually done in reinforced concrete in short sections. When lateral support is required for a wall which leans from the perpendicular, vertical reinforcement is inserted in preference to external buttressing, but this is effected in conjunction with underpinning. Vertical reinforcement may be inserted in a manner similar to that described for horizontal reinforcement except that it can be done in long lengths.

(vi) *Rough packing*

The general treatment of exposed core, such as broken wall-faces, ends and wall-tops, is called rough packing. It applies also to the introduction of rubble-masonry to support or strengthen overhanging masses which would otherwise collapse, the corbelling out to retain lintels, arch-springers, etc., and to the filling up of pockets in broken wall-heads or offsets which would otherwise hold water. Rough packing reproduces the appearance of the existing core; at the same time the new work does not look obtrusive. Rough packing requires skill and patience on the part of the mason.

Where core-work forms part of the original openings such as doorways, arrow-slits, etc., some proportionate allowance must be made for the face-work of these openings, keeping the core back sufficiently. This is necessary to allow for the space which the facing work originally occupied.

When the facing material is missing in narrow walls, the new core-work may be brought out nearly to the wall-face to obtain sufficient strength and support for overhanging masonry. In such cases core-work will take in the impression of the backs of the missing

[1] *Delta* metal is used in the United Kingdom.

face-stones. This can be done by building in the face-stones and withdrawing them soon after and assuredly before the mortar sets finally.

Sometimes, when the core and facing consist of flints, pebbles, water-worn stones, rubble or brickwork, it is better to build up temporarily the original wall-face imitating the character of the old structure and to remove the facing material before the mortar sets. The desired finish to the new work will then be satisfactorily obtained.

If rubble core-work contains poor weathering material, such as chalk, and if this material is retained and exposed to the action of weather it will probably disintegrate in a few seasons. When consolidating core-work of this kind, all soft material should be removed and replaced with rubble of greater durability.

When core-work is good, the joints alone should be raked out, refilling them with mortar. In cases of loose masonry temporary removal of stones and rebedding them as nearly as possible in their original positions is prescribed. Each case has to be decided on its own merit. The character of the old work in the building has always to be studied carefully with a view to successfully reproducing it.

(vii) *Fractures*

Minor fractures are filled with liquid cement, but major ones are tackled by bonding the sections of masonry together or by such measure as the circumstances demand. Where the walls are thin or slender, this is done by inserting bonders across the fracture at intervals in the face-work. Reinforced-concrete bonders shaped like dovetails are inserted in the body of the walls if they are thick. It would thus be seen that the spacing of bonders is governed by thickness, height and other conditions bearing on the stability of the wall.

(viii) *Voids*

Voids are usually detected by the external appearance of a wall, which gives indication as to its general condition. Where they are not obvious, they can be tested by tapping the wall-face with a hammer. If a dull or hollow sound results, it is almost certain that voids exist. If the wall is solid a ringing sound will be heard. The tests should be repeated, and all hollow-sounding stones should be marked.

If the wall has large voids or is honeycombed and is a mass of loose rubble and therefore dangerous, the conservator must reach a decision if he should withdraw the face-work, remove the loose core and reconstruct with solid masonry or treat with liquid cement. If he decides in favour of liquid cement he must execute the work with great caution; otherwise, the wall may possibly collapse while the work of cleaning and washing is in progress.

The normal treatment for voids is by filling with liquid cement, which brings us to grouting.

(ix) *Grouting*

Cement-grout, i.e. liquid mortar, usually cement, avoids generally the dismantling and rebuilding of defective masonry. Grouting with liquid cement is done either by hand or with a machine. In either case great care has to be exercised.

Hand-grouting suffices for small fractures and voids. The liquid cement is poured in through an aperture by means of a can or other suitable receptacle. The affected area is divided into convenient sections, so that all cavities can be completely filled. While treating voids the aperture should be level with the top of the void, so that air-pockets are not formed.

Grouting by machine is carried out on the gravity-principle or under pressure, the latter process being taken recourse to when the structure is of assured solidarity. Whether by hand or machine or through gravity or pressure, the affected area is first thoroughly washed with water so that all dust and dirt is scrupulously eradicated, and the surrounding masonry is well-moistened so as to receive and ensure the adhesion of the liquid cement, for it is well-known that cement does not adhere to dust or dry surface. If the liquid is injected into an unclean wall which has not been washed, it will set as an independent mass and will be a useless waste. The conservator should, therefore, make provision for a plentiful supply of water for this work, preferably from a main supply hose-pipe extension to the affected area. When a wall is to be grouted the sequence of operations will depend upon its size and the condition of the masonry. If it is of great height (as temples, mosques and *maḥals* usually are) it will be dangerous to commence washing out from the top and continue to the bottom without taking precautions to prevent the collapse of the face-stone. In such cases it is advisable to commence at the base of the wall, take a height of about 6 ft. along its length, bore the holes where required, wash out the cavities from the top of this section and then commence grouting from the bottom-holes and work upwards until the full height of the wall is treated. When, as very often happens, cavities penetrate through the thickness of a wall, the preliminary operation of cutting holes and cleaning and washing out must be carried out on both sides of the wall. In such cases, observations must be kept on both sides while washing out and grouting are in progress and any leakage immediately stopped with tow or clay.

(x) *Sea-erosion*

Sea-erosion can be checked by the construction of sea-walls called groynes or of plain masonry walling. The latter may, however, give the false impression that it is a part of the original structure. Experts in the United Kingdom are of the opinion that it is more advantageous to form an artificial rock in concrete.

(xi) *Treatment of prehistoric and protohistoric sites*

Implementiferous palaeolithic sites, neolithic settlements, megalithic burials, e.g., cairns, cists, dolmens, umbrella-stones (*koḍaikals* and *topikals*) and menhirs and other similar monuments, which largely constitute the cultural heritage of prehistoric and protohistoric south India, are liable to considerable dilapidation after excavation unless steps are taken to preserve them immediately. This can be done in two ways. A complete cover-house can be constructed over the remains. This gives adequate protection from the weather but is costly and may also detract from the character of the remains. The second method is to provide a concrete roof over the remains and cover the whole with soil and grass, suitable access and lighting hatches being arranged.

To recall here a few instances from the United Kingdom: at Midhowe, a Stone Age village at Skara Brae, Orkney Islands, Scotland, a cover-house has been built over the entire extent of the cairn-walls of stone with steel trusses and corrugated iron covering. The relics or models thereof have been laid *in situ*, and the whole is viewed from metal

gangways supported by the roof-trusses. Thus the visitor can see everything without the risk of damage to the monument. Viewing windows are placed in the end-walls for use when access cannot be obtained. The best-preserved chamber has been covered with a glass roof with viewing windows.

At Blackhammer, also a Stone Age village in Orkney Islands, the second method, viz. a domed concrete roof with a glazed roof-light thrown over the chambers, has been adopted. The visitor enters by a hatch in the side of the roof and can walk within the chamber. Externally the cairn is re-formed and covered with turf.

Megalithic burials, such as of south India, and enormous walls, such as at Rājgir in Bihar and Hampi in Āndhra, have to be repaired by methods adopted in the United Kingdom in regard to the treatment of the Brochs (Iron Age structures). These, like the Brochs, are assemblages of dry stone, having no mortar as binding material. To repair them by pointing would be alien to their character. To solidify the walls and at the same time preserve their external appearance, secret grouting has been resorted to in the Broch at Glenelg in Scotland. The joints have first been packed with clay to a depth of 6 in. and liquid cement-grout poured into the heart of the wall through ducts in the wider joints of the wall. This method, which has preserved the Brochs of Scotland, is also suitable to Indian conditions, though it has not been tried in this country.

4. ARCHAEOLOGICAL GARDENS

The gardens maintained by the Department of Archaeology are of two categories: (1) those pertaining to monuments which had gardens around them as a part of their original design, and (2) those, usually not as elaborate, which are intended to beautify monuments originally without the appendage of gardens. Under the first category come the monuments erected by the Mughuls, who were renowned for their love of ornamental gardens and orchards. In such cases, traces of the old flower-beds and alignment of water-channels, both for decoration and for irrigation, are in many cases still extant. Such monuments include Humāyūn's tomb and Red Fort at Delhi, Bībī-kā-maqbara at Aurangābād, the palaces at Pinjore and, above all, the Tāj at Agra. The maintenance of the gardens attached to these monuments is indeed a difficult task, for any new lay-out has to fall in line with the original design and must be in consonance with what the master-builders had in mind. The maintenance of these ornamental gardens is a necessity, second in importance only to the maintenance of the monuments themselves, for without them the monuments are incomplete. In other cases, e.g. the Quṭb and Lodī monuments at Delhi, the gardens are primarily intended to provide a setting for the monuments and to make the surroundings attractive. While a greater freedom in their lay-out may be allowed here than in the preceding category, the temptation of over-decoration is to be resisted, and the gardens should not be allowed to dominate the monuments. In many cases, where the landscape is dry and rugged, it should be sufficient to raise lawns and a few trees and hedges; in others, which are within or near large cities and attract a large number of visitors, more ambitious gardens may be planned, but not losing sight of the fact that it is not the objective of archaeologists to provide public parks. In either category, caution should be taken against modernizing the gardens.

In the early years of the present century, when monuments at DELHI were being reclaimed from wilderness and decay, the question of laying gardens around them received equal attention from the Department. Thus, the gardens round *Quṭb*, the *Lodī monuments*, *Humāyūn's tomb*, *Purāna Qilā*, *Koṭlā Fīrūz Shāh* and *Red Fort* were planned and laid. At AGRA the gardens at the *Tāj* and other monuments were planned afresh and renovated.

There are now eight archaeological gardens each at Delhi and Agra. With the coming in of the monuments in the former States, the gardens at PINJORE (PEPSU), AURANGĀBĀD (Hyderabad), BANGALORE and ŚRĪRANGAPAṬNA (Mysore) and DEEG (Rājasthān), not to speak of a few minor ones, have come to the charge of the Department, though they are at present being maintained by the respective State Governments as agents out of funds provided at their disposal by the Department. The same arrangement holds good for the archaeological gardens at AGRA, but steps are under contemplation by which the Central Government can assume their direct charge.

Most of the gardens at Delhi suffered enormously during the period following the Partition of India in 1947, when they were occupied for habitation by refugees from West Panjab. Earnest efforts of the Department undertaken at a considerable cost have, however, succeeded in reclaiming them, with the result that they are once more in a thriving condition and provide pleasure-spots of the city. A central nursery is also maintained to meet the requirements of all the archaeological gardens at Delhi.

5. IRRIGATION-SCHEMES AND MONUMENTS

Hydro-electric and irrigation-schemes which require raising of water-levels as of the Tungabhadrā near Hampi and the Krishṇā near Nāgārjunakoṇḍa, would eventually submerge some of the monuments at Hampi and the whole of Nāgārjunakoṇḍa. A similar problem arose in Scotland in regard to the Lochdoon Castle which was formerly on an island in the lake Lochdoon. When the water-level was proposed to be raised for hydro-electric schemes, the Ministry of Works wanted to save the Castle, as it was mostly of the comparatively rare thirteenth century type. The Ministry resolved to remove the castle, or, at least, a great portion of it, to a higher site on the mainland. The impossible was achieved: detailed plans and photographs were prepared; and the castle was removed stone by stone and was set up on its new site. This achievement of the Ministry of Works would constitute the apogee of perfection so far as preservation of monuments is concerned. This will remain our ideal, though how far we can achieve it for our monuments facing similar problems remains to be seen.

6. REFRESHER COURSES IN CONSERVATION

Since 1945, when the conservation of all the monuments was taken up directly by the Archaeological Survey and the agency of the Public Works Departments was dropped, the principles of conservation noticed in the above pages were driven home to the executing conservation-staff of the Department by the institution of a conservation-course at New Delhi. Since then refresher courses have been conducted regularly and have helped in a large measure to give a uniform system to and a scientific control over different conservation-works and to solve many problems of the Circles.

7. OUTSTANDING CONSERVATION-WORKS

A few outstanding and large-scale conservation-works undertaken from time to time are described below.[1]

[1] This section has been prepared from the materials that the Circle Superintendents kindly gave me, for which I am thankful to them. The monuments are described, for obvious reasons, in the present orientation of Circles (fig. 1, p. 47). Except where otherwise stated, the works have been done by the Department of Archaeology.

All types of monuments—megalithic burials, rock-cut temples, both cut in and cut out, structural temples, Buddhist *stūpas*, *vihāras* and *chaityas*, tombs, forts, mosques, palaces, *maḥals*, excavated remains, painted caves and temples, inscriptions, sculptures, carvings —have received their due share of attention. It would be readily appreciated that the problems of each category of monuments are different. 'In ruined standing monuments the chief tasks have been the clearance of their plans by rescuing them from heaps of fallen débris; the preservation of the core of masonry or brickwork exposed by the facing having fallen off; filling up and grouting cracks; underpinning worn-out bases of walls; resetting perilously out-of-plumb walls, making ruined wall-tops watertight; pointing open joints; eradication of vegetation, etc. In Muslim monuments additional complications are often introduced by the presence of damaged arches and domes. In the rock-cut caves and temples of west and south India the gradual wearing out of the rock has been the chief problem. While chemical preservation is called for in some cases, in the majority of them the percolation of water from one or more sources, which may be at a considerable distance from the monument, is generally hard to detect and check. In excavated remains with buildings of more than one period the problems are necessarily different: the preservation is concerned with the overhanging later structures, often resting on nothing more than loose earth or débris, and sometimes with the drainage of rain-water from the lower levels much deeper than the adjoining surface. In the excavated areas of Mohenjo-daro and Harappā salt starts disintegrating the brickwork immediately after it has been exposed. The use of over-burnt bricks was found to be nothing more than a palliative and the practice has now been stopped. The above categories of work do not by any means exhaust the numerous problems the conservator has to face in preserving ancient monuments but convey some idea of their variety and wide range.'[1]

A. North-western Circle, Delhi

The area now covered by the North-western Circle was in the early years divided between two offices, at Lahore and Agra. In 1910 and the succeeding years the planning of the new capital of New Delhi called for a thorough conservation of the Muslim monuments at Delhi, and great attention was consequently paid to them. Sir John Marshall divided the Delhi area into several groups and carried out conservation of considerable magnitude to bring the monuments into accord with the new set-up of the capital. The villages round the *fort* of *Sher Shāh* (1542-45) were removed, its walls and gateways were relieved of débris and a new approach road through an old gate was provided. In the *Red Fort* of *Shāh Jahān* the buried causeways, water-channels and fountains were excavated and made to function. At the *Quṭb Minār* (pl. LXXXV) the old levels of buildings were exposed and the later accretions removed. The *Tughlakābād complex* towards the south of Delhi was treated with scrupulous care, the gates in the southern wall of the town were restored to the normal condition, and later on the central sections of the citadel and *Ghiyāsu'd Dīn's tomb* across the road were treated. Other important monuments, such as *Humāyūn's tomb*, *Safdarjung* and *Hauz Khāṣ*, were then taken up and relieved of their mutilated conditions. Gardens were laid at each of these sites and trees generally grown by Mughul emperors were planted in them. Monuments such as *Sher Shāh's mosque* and *Lodī tombs*, inhabited by villagers, were relieved of all habitation-marks and modern encumbrances. Roofs of monuments in the *Red Fort* were restored, and the work of replacing missing stone-inlay in the Dīwān-i-Khāṣ was taken in hand. After the Partition

[1] M. S. Vats and A. Ghosh, 'Conservation', *Archaeology in India* (Delhi, 1950), pp. 157-58.

in 1947 a large number of monuments in Delhi were occupied by refugees from West Pakistan, but have now been relieved of them and restored to their original condition. During the occupation of refugees not even a blade of grass was noticeable; now these areas are filled with beautiful gardens.

Important monuments in the Kāngrā and Kulu valleys, such as the *fort-temple* at BAIJNĀTH in Kāngrā, *temple* at BIJORĀ and *Brahmanical temples* at MASRUR, which had suffered in the earthquake of 1905, were repaired with cement-grouting and masonry-patches. A rare specimen of pre-Muslim irrigation-system, the *dam* at ANANGPUR in Gurgaon District, consisting of a high masonry wall with sluices for letting in water, was exposed. The wall was excavated 20 ft. deep and its undermined parts restored.

B. NORTHERN CIRCLE, AGRA

Sir John Marshall says that nowhere else in India has conservation-work been more systematic or more steadily guided by a large and comprehensive purpose than in Agra. The greatest achievement in archaeological works at AGRA has been the repairs to the *Fort*, the *tombs of Akbar* and *of 'Itimādu'd Daulah* and to the *Tāj Maḥal*. At the Tāj Maḥal the approach-road was relieved of modern accretions, the colonnades of the fore-court were rebuilt and the forecourt was laid out with lawns and trees. The new garden was re-laid on ancient lines and the old water-channels and fountains restored and put to use. Although large-scale measures of conservation had been carried out from the time the Tāj Maḥal came under protection, in the last decade the dome of the Tāj became a subject of alarm in the press and on the floors of legislatures. It was reported that cracks had developed in the dome, which had ceased to be watertight. Actually no defects of this nature were present, but due to age and weathering many of the joints had opened up and marble slabs had fractured due to rusting of iron clamps and dowels fixed in them. This allowed rain-water to gain access into the inner core of the brickwork. The programme of repairs was well in hand, but due to the sensation that had been set afoot and the outstanding national importance of the Tāj, the Government of India thought it expedient to appoint an advisory committee with whose recommendations they wished to be fortified before any large-scale further repairs were undertaken. The committee furnished its recommendations in 1942, and the work of conservation is now proceeding in accordance with the long-term recommendations set forth in its report. The more urgent work on the marble facing of the drum and the dome and the inlay-work on them has been completed. The roof of the main building has been provided with fresh concrete, and watertightening of the façade of the main platform has been achieved. Work is now progressing on the façade of the mausoleum, and after this has been done the floor of the main terrace and *minārs* will be taken in hand. The bulk of work needed to the adjacent mosque and Mahmānkhāna has been executed, and it is hoped that in the course of the next five years the entire set of recommendations will have been brought to completion The present structural condition of the Tāj is in no way different from what it was nearly three hundred years ago, when it was adversely reported on by Prince Aurangzeb.[1] All that is needed to keep the monument in perfect condition is constant vigilance, supervision and putting into effect without delay the necessary repairs, and all this is being done.

[1] M. S. Vats, 'Repairs at Agra and Fatehpur Sīkrī: 1944-49', *Ancient India*, no. 6 (1950), p. 92.

At FATEHPUR SĪKRĪ, the deserted capital of Akbar, the complex of buildings containing the *tomb of Shaikh Salīm Chishtī* was found to have developed cracks and the lofty walls on the south and east had tilted outwards due to the soakage of rain-water, as the original network of drains became choked. The *Baland Darwāza*, which is 134 ft. high, and the wall flanking it threatened to fall and thus cause a major archaeological catastrophe. The monument has now been thoroughly overhauled from the underground cells to the roofs and parapets, and the drains at varying levels together with the *birkha* (underground reservoir) have been attended to. The entire southern terrace in several storeys has been dug out and re-laid with fresh lime-concrete. Some of the cracks in the buildings were found to be very deep-rooted with large ramifications inside. These have been grouted.

At KAṬĀRMAL in Almora, the *Baṛā Āditya temple* was declared past repairs, as its *śikhara* has almost fallen down except the eastern façade, where also the facing stones were disturbed. A serious attempt was made to preserve as much of it as possible. The débris was removed, and the broken masonary was rendered secure by judicious care and supervision. Today the *śikhara* stands there giving a fair idea of the original grandeur of the temple.

The beautifully carved *Nara-Nārāyaṇa temple* at DEOGARH of the Gupta period (sixth century), which had been very badly in need of repairs, was restored in its plinth up to three courses, the third course to a much greater length, in order to build up the corner-shrines and to restore the flank-walls of the flight of steps on all the sides to the same height.

C. CENTRAL CIRCLE, BHOPAL

The world-famous Buddhist *stūpas* of SĀNCHĪ in Bhopal State (second-first centuries B.C.), which had suffered from age-long neglect and indiscriminate digging by previous explorers, were the first and foremost to receive attention between 1912 and 1920 from the Department in collaboration with Bhopal State. The south-western quadrant of the Great Stūpa, which was about to collapse and to bring down with it the south and west gates, was dismantled and redone. The *aṇḍa, harmikā* and the balustrades of the third *stūpa* were also restored and the large number of other monuments at the place were preserved. The site was levelled and turfed. The monuments were put to show and display in 1920 in very much the same condition as we note with pleasure today (pl. LXXVI).

D. MID-EASTERN CIRCLE, PATNA

Of the outstanding works done in the Mid-eastern Circle, mention may be made of those carried out to the *Buddhist establishment* at NĀLANDĀ (fifth-twelfth centuries), where the problems of conserving excavated remains were so successfully tackled that Sir Leonard Wooley says that 'the Great Stūpa has been dealt with very successfully and in some of the monasteries the method adopted for preserving high-lying walls by underpinning with reinforced concrete or with set-back brickwork is very good and the conspectus of different levels so given is most clear'. The task was made difficult by the fact that during the centuries of its existence the Nālandā-mahāvihāra had been repeatedly overbuilt on the earlier remains. The resultant sequence of superimposed ruinous structures exposed at the site greatly complicated the measures of conservation. The largest possible extent of the successive superimposed structures had to be preserved but in such a way as to leave no doubt about the development through succeeding periods of

occupation and decay. The area of each period that could be preserved as such was, however, restricted because each succeeding monastery had followed one and the same plan. But by careful observation the Department has succeeded in conserving the excavated remains of this great international centre in a manner intelligible to the interested visitor, while preserving intact the internal evidence of the different periods. To this end, the ruins, composed almost wholly of bricks, have been built up again sufficiently to preserve the plan and other features of the original structures (pls. LXVII and LXIX). The walls have ordinarily been built up breast-high above floor-level with brick-in-mud as in the original work, with specially manufactured large bricks where necessary. The walls have been deliberately left open to the sky with the exposed wall-tops secured against water-percolation by the provision of a course of rammed concrete hidden behind the faces, on which a rough hearting of brick-in-mud has been laid with a top dressing of earth to encourage the growth of grass and so to induce a more natural appearance of the ruins. At many places, as in Monastery Site 1, the overhanging walls of a later structure projecting beyond the exposed frontage of earlier ones beneath them have been supported with concrete lintels carried on rail-iron cantilevers encased in concrete. At other places, underpinning has been done with a solid core of brickwork inside faced with toned concrete carefully bonded to it and brought to a rough surface to simulate the original débris found beneath the later walls. In several of the monasteries the dangerously inclining walls of the lower levels supporting later walls have been carefully removed and rebuilt plumb, and where the old structure was too dangerously shattered to be underpinned, the whole wall has been dismantled and rebuilt, the indications of subsequent structures that it contained being carefully repeated in the new work. The old brick pavements of the courtyards of the monasteries, often found in a broken and uneven condition, have been taken up and re-laid to an even fall to prevent ponding of water on them. Decayed parapets of the courtyards have been made good with toned concrete, care being taken to indicate the bases of the columns that once supported the verandah-roofs. At Temple Site 2 the ruined plinth, with its remarkable dado of sculptured panels, was suitably conserved. Of the seven integuments revealed at the Main Temple Site (pl. LXVII) the earlier three have been covered again with infilling owing to the shattered condition of the remains above them, only the four later integuments being exhibited. The three exposed corner-towers of the fifth period, decorated with exquisitely modelled stucco images (pl. LXVIII), have been carefully preserved. Their top has been rendered watertight, and the cracked stucco-surface secured by filling the fissures with a specially prepared cement. The broken fragments of the stucco images have been similarly refixed in position and the images treated with preservatives after the removal of injurious salts by the application of wet paper-pulp (below, p. 204). A concealed drain has been made along the edge of the cut east face and provided with a projecting iron spout to throw the water clear off the face. The exposed stairs of the three last periods have also been suitably conserved. Neat pathways have been constructed both inside and outside the site. Though the Department started work in 1915-16 and has so far spent nearly two lacs of rupees on the maintenance and preservation of the Nālandā remains, there can be no finality in its work in this direction.

At ROHTĀSGARH in Shāhābād District, Bihar, the principal structural remains such as *palaces*, *buildings*, *gateways* and the parts of the *fort-wall*, dating from the time of Sher Shāh and Akbar, were saved from decay by timely repairs in 1903 and 1904.

At SĀSĀRAM in Shāhābād District the grand *mausoleum of Sher Shāh* and the lesser tombs of two succeeding members of his dynasty were thoroughly overhauled.

At HADAF in Santhal Parganas, Bihar, extensive clearance and underpinning were carried out during 1929-34 at the imposing brick-built *Juma mosque* of the Akbar period,

the northern bay of which had already collapsed. The decayed ceiling of the central chamber was made good with toned cement-plaster after reinforcement of brickwork above. At JOGA in the Hoshangābād District, Madhya Pradesh, extensive repairs were carried out to the *Mughul fort*, the mosque in it, the arcaded entrance and the fallen parts of the north-western bastions of the fort.

E. EASTERN CIRCLE, CALCUTTA

In the Eastern Circle the decay of monuments is heaviest particularly in brickwork owing to heavy rainfall, subsoil conditions, damp climate, humidity, salt-action and earthquakes, the last particularly in Assam. Decay of brickwork in the Muslim buildings at GAUR and PĀNDUĀ, the twin capitals of the Sultāns of Bengal (twelfth-sixteenth centuries) and the excavated pyramidal *temple and monastery* at PAHĀRPUR of the early ninth century, now in East Pakistan (above, p. 155; pl. LXXIII), has been sufficiently checked by a long-period programme of paper-pulp treatment and chemical wash to remove salts. It is a matter of pride to record here that these monuments in 1947 were transferred from us to Pakistan in an excellent state of preservation. Besides adequate conservation the different periods of construction have been carefully indicated at Pahārpur.

Excessive rainfall, luxuriant vegetation as in forests and frequent seismic disturbances contribute to the rapid disintegration of monuments in Assam. Huge sums of money have been spent on the temples and palace-remains, which are memorials of Ahom rule from the fifteenth to the eighteenth centuries, by way of frequent jungle-clearance and structural repairs. Consequent on the earthquakes of 1947 and 1950, the *Śibdol temple* at ŚIBSĀGAR, the largest and highest in Assam, built by Rānī Ambikā in 1734, was violently shaken and sheared, with the result that its facing stones were thrown off, it developed wide and long cracks and its gilded copper *kalasī* fell down. Necessary conservation-measures by way of grouting and pointing the sheared portions of the plinth, renewing the broken surface of the wall with dressed stone slabs from Kohimā Hills, placing alternate courses of bond-stones with clamps and grouting the vertical cracks in the exterior and interior of the surface of the spire and in the ceiling of the temple are in progress. The *kalasī* will be regilded and restored in its original position after the work of structural conservation is complete.

The monuments of Orissa, particularly those of Bhuvaneśwar and Konārak have been the greatest attraction to tourists. The stupendous *Sun temple* at KONĀRAK, District Puri, on the sea-shore, built about 1278 by the Gaṅga king Narasiṁha I and called the Black Pagoda by early mariners, was excavated out of sand in 1893, when its architectural wealth was brought to light. While the pyramidal roof of the front porch (*jagmohan*) was found to be almost intact, the *śikhara* of the sanctum was missing (pl. LXXXVI). As a measure of holding the former in position, all its entrances were blocked up, the interior reinforced with a 15 ft. wide dry-stone wall and filled up with sand in 1902. This step has proved to be of dubious value, as rain-water percolating from the top moistens the sand and the dampness of the atmosphere has been responsible for a weathering of the monument and for a thick growth of moss and lichen on its walls.

From the last decade the monument received persistent attention. An extensive programme of structural repairs, including grouting wide gaps in the masonry-joints and replacing fallen and worn-out members has been and is being carried out. The large-scale chemical treatment given to the monuments is dealt with below (p. 203). It is obvious that due to the adverse atmospheric conditions prevailing in and around the monument both the structural and chemical treatment have to be carefully planned and executed

in accordance with the recommendations of an expert committee appointed by the Government in 1950 to tackle the problems of preserving this great and unique temple. The recommendations of this committee, which met twice on the spot (1950 and 1952), are:—

1. As joints between stones in the walls of the original masonry presumably allow some water to go in, all the holes and open joints should be grouted and pointed with hydraulic lime-mortar added with necessary waterproofing finish.

2. As the existing terraces over the *vimāna* and the plinth-masonry all round are very uneven and allow rain-water to accumulate and cause percolation, terracing and concreting the tops of irregular masonry should be undertaken.

3. The rusted iron cramps should be replaced by copper ones.

4. The level of the ground surrounding the temple being uneven, pools of water accumulate round the temple, and seepage is likely to occur. The ground should, therefore, be re-sloped by the removal of surplus sand in such a way that water flows away from the temple and necessary rain-water drains should be provided, in case attempts to locate the ancient drainage, if any, do not prove successful.

5. The compound-wall which has fallen down at many places should be reconstructed with stone available at the site.

6. Regarding the question of moisture in the sand-filling inside the porch, it was resolved that in order to improve the ventilation of the interior four vents on each side, of the approximate size of 3 ft. square, should be connected at different levels and doors provided on the outside to prevent ingress of moist air during the monsoon. In the first instance one vent will be constructed through the masonry filling the entrance on the eastern side of the structure.

7. With a view to producing a screening and shielding effect for the temple from the drifts of sand into the compound and from attrition, extensive plantation of cashew-nut and casuarina trees should be undertaken by the Forest Department of the Government of Orissa, who have been approached in the matter.

The necessary detailed estimate for this project have been sanctioned, and the work is in progress. An exhaustive photographic record of the monuments and sculptures has also been prepared.

Another outstanding conservation-work carried out in Orissa consists of special repairs to the *Mārkaṇḍeśvara temple* at BHUVANEŚWAR, which is one of the earliest of the group and is distinguished by a flat-roofed rectangular *jagmohan*. The work involved careful dismantling and rebuilding of all the facing stones of the *jagmohan*. A large number of carved stones, far too decayed to be used again, were replaced by new ones with plain mouldings.

The *rock-paintings* at SĪTĀBHINJĪ in Keonjhar District, Orissa, executed by the tempera style on the underside of a huge rock-shelter called Rāvanachhāyā in *circa* fourth century A.D., have been chemically treated and adequately preserved. To guard the paintings against the onslaughts of rain, a baffle-wall in cement-concrete has been constructed alongside the overhanging rock, and a throating has been cut around the underside.

F. SOUTH-EASTERN CIRCLE, VISAKHAPATNAM

In the South-eastern Circle the Buddhist *stūpas*, *chaityas* and *vihāras* of NĀGĀRJUNAKOṆḌĀ on the banks of the river Krishṇā, attributed to the Ikshvāku kings of the third century

A.D., were elaborately excavated (above, p. 167) and adequately conserved and put to good show. With the provision of a good approach-road this place is attracting a large number of visitors. Unfortunately, the Nandikoṇḍā irrigation-project is likely to submerge the site, and this Department has soon to be busy with the task of excavating the whole area to expose all the structures and antiquities that are still buried there. There is a local site-museum where nearly five hundred sculptures from the excavations of Nāgārjunakoṇḍā, illustrating scenes from the life of the Buddha, his past births and everyday life, are exhibited. The place is of great repute, having been, in the second century A.D., the seat of Nāgārjuna, the founder of the Mādhyamika school of Buddhist philosophy.

The *Vīrabhadrasvāmi temple* at LEPAKSHĪ, which is noted for its mural paintings, is a monument of the sixteenth century, which has been receiving special attention since 1944 in regard to the cleaning and preservation of the paintings and watertightening of its roofs. The paintings illustrate scenes from the *Rāmāyaṇa*, the *Mahābhārata*, the sports (*līlās*) of Śiva and the lives of Śaiva saints, Chola kings and Virupaṇṇa who was the founder of the temple.

G. SOUTHERN CIRCLE, MADRAS

In the Southern Circle the problem of conservation is complicated by the fact that most of the temples which are declared as national monuments are even now great living shrines and places of worship. It is not possible to assume complete responsibility for the maintenance of such temples. The most outstanding groups of monuments in this Circle are rock-cut caves and monolithic temples and structural stone temples of practically every period from the seventh to the eighteenth centuries. The second major group is a large number of forts, including hill-forts, forts on the sea-coast and inland forts and buildings of secular nature. Along with the temples go numberless inscriptions, sculptures and ancient paintings. The other ubiquitous class of monuments are the megaliths of varied types strewn practically over every district of the Circle (above, pp. 103 ff.).

The most outstanding landmark at MAHĀBALIPURAM is the triple-shrined structural temple on the sea-shore of the early eighth century A.D., called the *Shore temple*, which has been receiving continued attention ever since its protection. The sand-buried court on its western side has been excavated and retaining walls built all round to prevent sand-drifts, and partial reconstruction has been undertaken wherever necessary. But the danger from the adjacent sea has been a major problem, and in the earlier years of conservation the basement-walls of the shrine, which were actually exposed to the sea-waves, had to be frequently filled up and grouted to prevent undermining.

By 1915-16 the improvised breakwater on this side was strengthened. Repairs to the breakwater were renewed in 1928-29, and in the next year extensive repairs to the damages wrought by cyclone were carried out. In 1939-40 the erection of a groyne-wall to keep the sea away from the monument was taken up by dumping 2-ft. cube concrete blocks on the north-east side of the temple. Encouraged by the satisfactory results of this work, this groyne was further extended round to the south-eastern side (pl. LXXXVII). Though it has served its purpose very well indeed during the past six or seven years, it has recently shown weaknesses as a result of the onslaught of successive monsoons and cyclones, and now steps are under way to reinforce the affected groyne wherever necessary. This work is being done through the agency of P.W.D., Madras.

At the other monuments at Mahābalipuram clearance of accumulated sand covering a major portion of the *Five Rathas*, the structural *Mukundanāyanār temple* and the famous

bas-relief of *Arjuna's penance* was the initial work done, which first exposed these monuments to full view. The sand-dunes around the Rathas were cleared. As a latest measure, in order to prevent the deleterious action of the salt-laden and moist sea-breeze upon the sculptured surfaces of the Rathas, a wind-screen is being erected round them by planting an intermixed hedge of casuarina and cashew-nut trees.

A number of early structural temples are protected in the ancient city of KĀNCHĪPURAM, the capital of the Pallavas. The *Kailāsanātha, Vaikuṇṭhaperumāl, Mukteśvara* and *Mātaṅgeśvara temples*, which are of the Pallava period and are constructed of friable sandstone blocks, have been receiving progressive and regular attention ever since their protection. To this list has been recently added another early Pallava temple, the *Irāvataneśvara* The fragments of paintings in the corridor surrounding the Kailāsanātha temple have been chemically treated and preserved.

The ruins of *the fort* at GINGEE (pl. LXXXVIII), which consist of three extensive fortifications running over high hills and contain three citadels at top, have been receiving care ever since they were taken up for preservation. In historical importance this extensive fort comes only next to Mahābalipuram and other earlier monuments and represents the largest single group of monuments in the Circle that has had a continuous history from the thirteenth century down to modern times. The walls, ramparts and bastions have been extensively repaired as also the extant temples, mosque, durbar-halls, gymnasium, granaries, stables, stepped tanks, barracks, etc., within the fort. The monuments in the interior have been interconnected by the provision of suitable pathways.

The most important conservation-works at the *Bṛihadīśvara temple* at TANJORE (pl. LXXXIX), built by Rājarāja I (eleventh century), include the opening of the three lateral entrances of the *vimāna* that had been blocked up with masonry-walls during the Nāyaka times, for letting in more light and air into the painted circumambulatory inside the double-walled *vimāna*. This was a sequel to the discovery of Choḷa (eleventh century) and Nāyaka paintings (sixteenth century) in 1931, the latter in many places covering the former (pl. CII), and the inauguration of their chemical treatment and preservation. The painted chamber has been provided with tight-fitting doors on its two front-entrances to prevent the possible access of the deleterious soot, smoke and moisture from the *sanctum sanctorum* which is in worship. A similar circumambulatory over the second floor of the vertical portion of the *vimāna*, which was opened recently and cleaned of all its accretions, revealed eighty out of one hundred and eight *karaṇas* of dance according to Bharata's *Nāṭyaśāstra* sculptured on its walls. Faint traces of Choḷa paintings were also noticed on its walls. Both the sculptures and the paintings date from the eleventh century. The original double-tiered compound of the temple, which strings on its inner side a number of subshrines and contains Choḷa architectural features and inscriptions on the outside, has been lying buried almost to the ground-floor level externally, consequent on the construction of the bastions and fort-walls round the temple and the dumping of the spoil-earth from the moat dug outside a few centuries after the erection of the temple itself. Trial-excavation to determine the nature of stratigraphy of the accumulation was conducted as a preliminary to the clearance of this accumulation and exposure of the original wall, with inscriptions, to the level of its original basement.

The *Bṛihadīśvara temple* at GANGAIKONDACHOḶAPURAM is the second largest Choḷa *vimāna*, built by Rājarāja's son Rājendra Chola I (1014-44). In the last century this temple suffered much from wanton damage, when its stone *gopura* was blasted with gun-powder and the compound-walls pulled down to supply the necessary stone for a large masonry dam nearby, called the Lower Anicut. Ever since, the temple has presented a ruined and desolate appearance, though, fortunately, the *vimāna* is intact. The major

conservation-works done on this monument were the removal of dense jungle-growth over the *vimāna*, repairs to the front *maṇḍapa*, opening of light-windows on the ceiling to illuminate the interior of the *maṇḍapa*, and removal of accretionary structures therein. The northern lateral entrance of the *ardhamaṇḍapa*, which was in imminent danger of falling down, was strengthened as also the northern gateway on the outer compound-wall. After thus attending to the essential major repairs to the axial structure, work is being extended to the surrounding area.

The *kalyāṇa-maṇḍapa* of the *Jalakaṇṭeśvara temple* at VELLORE of the sixteenth century, which, with its exquisite array of sculptured pillars (pl. XC), is a gem of Vijayanagara type of temple-architecture, was watertightened and its cracked lintels suitably supported. These supports will have eventually to be removed after a less obvious mode of strengthening the broken lintels has been devised.

Among the forts that have received major attention may be mentioned the *Fort St. Angelo*, CANNANORE, in Malābār, where the destructive action of the Arabian Sea, which was cutting away the southern point of the promontory, has been considerably arrested by the dumping of large stones to form breakwaters. Extensive underpinning of the massive laterite masonry, which was dangerously undercut by the waves, has also been done.

As a result of the merger of the State of Pudukkoṭṭai with Madras State, a large number of protected monuments from the area have been added to the Circle. Of these, the most important are a number of cave-temples of the Pallava and Pāṇḍya periods and early Choḷa temples, among which mention may be made of the *Vijayālaya-Choḷīśvaram* at NARTHAMALAI, the *Muvar-koli* at KODUMBALUR, the *Sundara-Choḷīśvaram* at TIRUKKATTALAI and the *Śiva temples* at PANANGUḌI, KĀLIPATTI, TIRUPPUR, VISALUR and VIRALUR. These small and beautiful Choḷa temples were reconstructed wherever necessary with the old materials. Among the numerous *cave-temples* of Pallava and Pāṇḍya origins is to be mentioned the famous one at SITTANNAVĀSAL containing early paintings in the style of Ajaṇṭā. Between 1936 and 1947 these paintings received considerable attention, when they were chemically treated and preserved.

Out of the two hundred and ninety protected monuments and sites of the old Mysore State,[1] one hundred and eight monuments and eight sites have been absorbed in 1953 as monuments of national importance. Among them should be mentioned the Hoysaḷa temples especially those at Belur, Halebīḍ and Somanāthpur, the colossal Gommaṭeśvara statue at Śravaṇabelgola and Tīpū Sulṭān's summer-palace at Śrīrangapaṭna. The three Hoysaḷa temples received considerable attention during the past fifty years, when major works of conservation were done. In the case of *Chennakeśava temple* at BELUR, which is one of the gems of architecture, all the accretions in the courtyard of the temple were removed, the ruined brickwork superstructure over the *sanctum sanctorum* was pulled down, the resultant truncated roof was watertightened and other structural repairs of major nature were carried out to the main shrine.

The *Hoysaḷeśvara* and *Kedāreśvara temples* at HALEBĪḌ also came in for similar attention. A great amount of reconstruction-work had to be done, without, of course, affecting the ancient features or character of the monument.

The entire roof over the *navaraṅga* of the *temple* at SOMANĀTHPUR (pl. XCI) has been re-laid. The disjointed stones of the *mahāpadma* on the top of the central *vimāna* were taken out and put together again in order to close the wide gaping void that had developed.

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[1] My thanks are due to the Director of Archaeology, Mysore, for particulars supplied.

The colossal monolithic statue of the Jaina saint Bāhubali, locally popular as Gommaṭeśvara, which rises to a height of about 58 ft. and stands on the peak of Vindhyagiri at ŚRAVAṆABELGOLA, is one of the most important monuments, the preservation of which caused great concern to the Government of Mysore. Several cracks have developed on the face and the right hand of the statue. The rear of the statue reveals marks of surface-pitting. A research committee, constituted by the Government of Mysore to suggest measures for the preservation of the image, is conducting a thorough examination of the statue. The committee is of the opinion that these cracks and disintegration patches are purely superficial, giving no room for anxiety at present. Every care is being taken to see that the statue is preserved in a satisfactory manner for posterity.

At TALKAR, the *Kīrtinārāyaṇa temple* is a first-rate monument which was almost completely buried in sand. When the sand was removed, the courtyard and several new records inscribed on the basement and outer walls of the temple came to light. After sand-clearance, which revealed the exterior of the monument to view, it was seen that the structure was in a dangerous condition. Timely action arrested the decay of the monument. The roof has been thoroughly repaired, and the surroundings are kept neat and tidy.

At ŚRĪRANGAPAṬNA, as a preliminary to the preservation of the paintings in *Tipū Sulṭān's palace*, watertightening of its leaky roof was been completed.

Similar structural repairs have been proposed and are being taken up for the *Mattanchery palace* in COCHIN and some other structural temples in the Travancore-Cochin area, which contain mural paintings.

The only major monument in the State of Coorg is the *fort* at MERCARA, which has been extensively repaired and kept continuously in a state of good preservation. The greatest menace in this area, noted for the heaviest rainfall in south India, is that of vegetation of quick and abundant growth.

H. SOUTH-WESTERN CIRCLE, POONA

The *Gol Gumbad* at BĪJĀPUR, which entombs the mortal remains of king Muḥammad 'Ādil Shāh (1626-57), has been one of the major items of conservation of outstanding interest. The Department has been repairing it from time to time and maintaining it in a sound state of preservation. The dome-masonry developed early a number of cracks, and patches of plaster from the inner side of the dome began to give way. This interfered with the well-known acoustic properties of the monument and called for attention. In 1937 the exterior of the dome was rendered watertight by a shell of gunite.

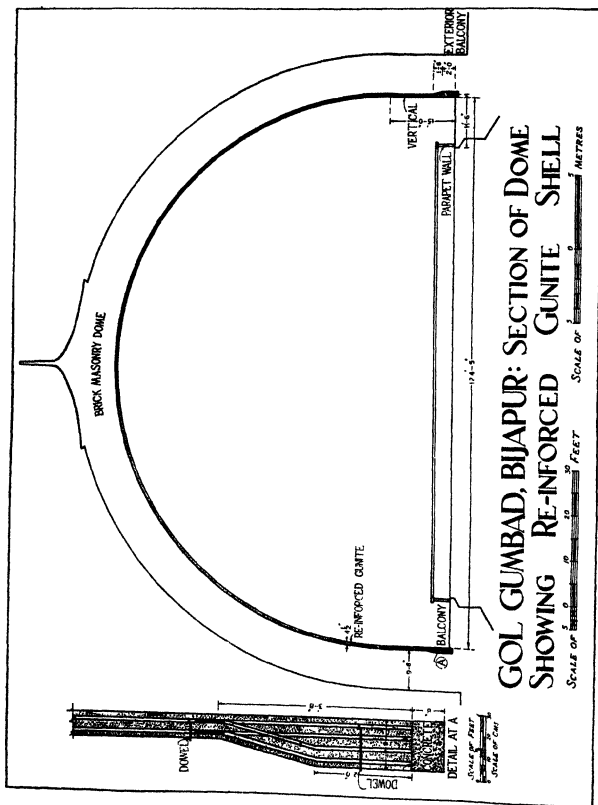
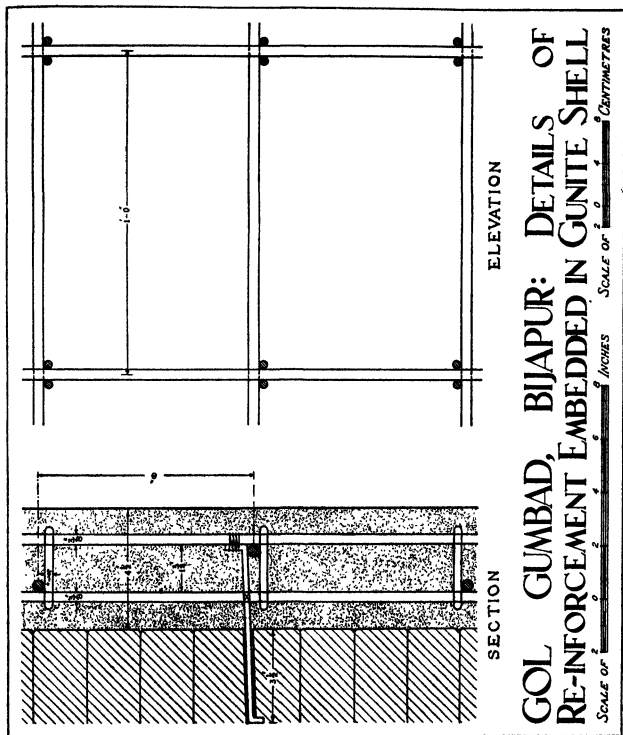
A further development in regard to the stability of the dome proved to be a great concern to the Department. Loose patches of plaster from the intrados of the dome began to fall down at intervals, and wide transverse cracks appeared in the brick shell, impairing the structural stability of the monument. The retention of the acoustic properties also depended on the condition of the intrados of the dome, and hence it was decided to institute inquiries as to whether the whispering properties of the dome, which constitute its chief attraction, would in any way be adversely affected if the intrados of the dome were to be stripped of all plaster and gunited all over to stabilize it.

After obtaining expert opinion of scientists, engineers and architects, who were unanimous as regards the replastering of the dome for the stability of the structure and retention of its acoustic properties, the Department proposed to provide a 4½ in. thick reinforced gunite shell below and against the intrados of the dome. The thickness of

GOL GUMBAD, BIJAPUR: SECTION OF DOME SHOWING RE-INFORCED GUNITE SHELL

FIG. 1

SECTION
ELEVATION
1'-0"
9"
GOL GUMBAD, BIJAPUR: DETAILS OF
RE-INFORCEMENT EMBEDDED IN GUNITE SHELL
SCALE OF 2 0 2 4 6 8 INCHES
SCALE OF 2 0 4 8 CENTIMETRES

Fig. 2

the gunite was to be doubled at the base to a height of 2 ft. resting on a reinforced circular beam at the base. The reinforcement was proposed to be dovetailed with the brick core by means of dowels at 3 ft. centres either way, grouted in the masonry of the dome (figs. 2 and 3; pls. XCII and XCIII.) (In actual execution stainless steel dowels were used in the portion above the cylindrical portion of the dome with a view to eliminating the factor of rusting and consequent damage.) The gunite was to be composed of one part of Portland cement and three and one-half parts of sand, and standard 'gunite' practice was to be followed in all the gunite-operations. The surface of the gunite was to be covered with a new plaster, quite smooth and uniform and following the contour and the colour of the existing dome. These proposals were intended to ensure the stability of the structure, the retention of the acoustic properties and its ancient appearance. The work of repairs lasted from March 1949 to July 1951.

Interesting details came to light when the intrados of the dome were stripped of the plaster. The exposed brickwork of the intrados above the plane of rupture was remarkably free from cracks, as expected. The lime-mortar between the bricks was found to be decayed to some extent. Square and round holes, 4 to 5 in. in diameter and about 4 to 5 ft. in length, containing wooden stakes decayed to the core, were found dotted over the intrados. The holes were cleaned of all wood and filled with plain gunite before covering them with reinforced gunite.

After the completion of the repairs it was deemed proper to undertake mechanical recording of the acoustical properties of the dome. The important conclusions arrived at in this respect by Dr. Tawde of the Institute of Science, Bombay, are :—(i) the whispering effect may be due to the cylindrical wall and the dome, the latter making the major contribution in the ratio of 5:1; (ii) corresponding to a point in the gallery there is focus at the diametrically opposite end in the gallery and at about the same distance from the wall; (iii) the cylindrical wall and the dome contribute about equally to the multiple-echo effect, the contribution by the cylindrical wall being of a more certain type due to the support it receives from the hard gallery-floor; (iv) the maximum number of distinct echoes heard has been found to be twelve, giving a better multiple-echo effect than that recorded by earlier investigators, which may be attributed to the improvement brought about by repairs to the intrados; (v) the sharper the note the better is the echo-effect; (vi) a very loud explosive sound persists for about twenty seconds; and (vii) the reverberation-time of twenty seconds for note used is in reasonable accord with the theoretical estimates from Sabine's formula. The report has established beyond any doubt the efficacy of the repairs undertaken by the Department.

The famous *rock-cut temples* on the island of ELEPHANTA present some acute problems of conservation, all of which have their genesis in the disintegration of the rock caused by the presence of injurious salts in the atmosphere and the percolation of water into the caves. In 1935 three fragments of appreciable size fell off from the Maheśa figure. Following the report of a committee of experts, extensive measures of conservation have been carried out here. All earth and vegetation have been removed from the top of the cave. Visible cracks have been grouted and the entire rock-surface covered with a coat of gunite. Thirty holes, each 2 in. in diameter, ranging in depth from 40 to 70 ft. and spaced 6 ft. apart, have been bored in the southern fringe of the rock-roof and filled up with cement-grout. Another group of about fifty suitably-spaced holes have been made and filled up in the entire surface of the roof-rock. To prevent rain-water from finding its way into the main cave a deep trench with an angular flank on either side has been sunk behind it and filled with an impervious cement-barrier by the François cementation-process. In one of the caves columns of plain ashlar-masonry have been constructed to hold the

ceiling. The loose or cracked parts of all sculptures have been internally secured with non-rusting metal dowels and cracks in the panels have been neatly filled up with suitably-coloured mortar. A constant vigilance is maintained over this monument.

The *Buddhist caves* at KANHERI (first century to ninth century A.D.) were owned by private people for a long time. The Government of Bombay have now acquired the whole area for establishing a National Park. This encouraging move led the Department to launch on an extensive conservation-programme for the preservation of the caves, the main problem of which is to check the progressive deterioration of the cave-walls and their sculptures and inscriptional records. The first major task of the Department was to remove the wild growth of vegetation completely enveloping the view of these caves. Some of the pillars supporting the rock-caves have been repaired with cement-concrete (pl. XCIV). The courtyards have been levelled up and approach-roads laid. The cracks in the pillars have been strengthened by means of stainless steel fasteners. A concrete floor to the cave matching with the original texture has been provided. A huge crack on the standing figure of Buddha in the *chaitya*-cave has been pinned with stainless steel pins and grouted. A hole in the leg of the Buddha figure has also been filled up and supported from behind. An important cave in this group, which is a *vihāra* and is known as Darbār Cave, has two longitudinal benches provided in the centre of the hall, which is a unique feature in Buddhist cave-architecture. As it was feared that this may be lost as a result of rock-decaying, it was decided to clear the cave of the accumulated débris to trace the original alignment of the benches and reconstruct them in cement-concrete. The work has been accomplished and the cave now gives an idea of this unique feature. Some of the missing pillars of this cave, which is a huge congregation-hall, have been reproduced in exact imitation of the original features. The pillar-bases of the façade of the cave which had decayed have been scrubbed clean and washed with water and then reproduced in exact imitation of the original details.

With the progress of the scheme of the Bombay Government to give amenities to the visitors to the National Park of Kanherī the number of visitors to the caves has increased enormously. Carved out of the steep incline of the rock-surface that they are, the caves have been provided with rock-cut steps which had become slippery due to the decay of the rock; it was found necessary to provide R.C.C. railing along the steep flights of steps and in front of the Darbar Cave. The numerous cisterns in the caves for the storage of drinking water during summer have been cleaned of débris accumulated for centuries and provided with channels wherever they had been defunct due to the decay of rock. For the convenience of the visitors a complete plan of all the caves is exhibited right at the commencement of the caves.

The repairs undertaken to the numerous caves here have been of the nature of reproducing essential features like decaying plinths, pillars and seats and giving support to sculptures needing support due to the decay the of rock. Preference has been given to the preservation of the caves which are important on account of their inscriptional records and sculptures. The chemical treatment of the sculptures and inscriptions in the caves has been kept in progress *pari passu* by the Archaeological Chemist, who has attended to the preliminary work of preservation of some paintings that came to light during conservation.

With these initial and urgent repairs completed, the Buddhist caves at Kanheri have emerged in such an attractive state that they now form an essential item in the itinerary of tourists visiting Bombay.

As most of the important monuments of Hyderabad State are now comprised in the South-western Circle of the Department, it may be convenient to mention here the

chief conservation-works done by the Archaeological Department of Hyderabad,[1] which has been in existence for the past forty years and was preserving a number of rock-hewn monuments, including the famous caves at Ajaṇṭā and Ellora, a number of structural monuments of Buddhist, Jaina and Brahmanical creeds, including the temples of Pālampeṭ, a number of medieval monuments, mosques and tombs including the fort-mosque of Golconḍā, Mushīrābād mosque of Hyderabad, Sola Khamb mosque of Bīdar and Qalander Khān's mosque of Gulbarga, Kālī Masjid of Aurangābād, 'Ādil Shāhī tombs of Gogi, the grave of Aurangzeb at Khuldābād, Malik Ambar's tomb also at Khuldābād, Bahmanī tombs of Bīdar and Gulbarga, Bībi-kā-Maqbara of Aurangābād, and hill-forts, which are striking examples of military architecture, including the forts at Daulātābād, Raichūr, Warangal and Mudgal. Since this year the important monuments of Hyderabad are being looked after by the Central Government. Their conservation had been till now in the charge of the Hyderabad State.

A rough idea of the magnitude of the work entailed on the conservation of the *caves* of AJAṆṬĀ and ELLORA will be gained from the fact that a sum of Rs. 7,20,000 has been spent by the State on them. The repairs consisted of internal measures such as constructing supports in the form of reinforced concrete pillars or piers, pressure-grouting of cracks, repairs to ancient steps and stairways, scraping out of decayed rock on the walls of floor or roof and filling it in. The most important work, however, is the construction of overhead drains on the rock-roof of the caves to divert the water from off the roofs and façades of the caves and prevent any possibility of water stagnating on or seeping through the rock-roof. Water is the greatest enemy of the trap rock in which these caves have been carved. Other *rock-hewn monuments* that have been successfully conserved are at PĪTHALKHORĀ, AURANGĀBĀD, GHATOTKACHA and BHOKARDAN.

The world-famous mural paintings of Ajaṇṭā had decayed by the passage of time and the inclemencies of weather to such an extent that the painted surface was flaking away and perishing at the gentlest touch. 'Further, in the few places where the frescoes were in tact they were smeared by some injudicious artists in comparatively recent times with a thick coat of copal varnish in order to brighten their detail and also to preserve them from moisture. The result was, however, the opposite of what was intended; for the varnish, during the course of a quarter of a century, not only made the fine brushwork the more indistinct, but in some cases, where the dirt has not been removed beforehand from the fresco, converted the entire painting into a dingy patch.'[2] Thanks, however, to the liberal policy of the Government of Hyderabad, the repairs to the caves and the cleaning and conservation of the frescoes have been carried out on sound principles, and now that they have been taken over by the Government of India, they will continue to receive the utmost care and attention.

'To give an idea of the expenditure incurred and the solicitude shown, mention may be made of the appointment with liberal remuneration of two Italian experts, Professor Cecconi and Count Orsini, for the preservation of Ajaṇṭā frescoes for two seasons—1920-21 and 1921-22. But this expenditure was, however, very small in comparison with the vast sums spent on the buildings of roads and bridges in order to make Ajaṇṭā easily accessible to the ordinary student.'[3]

[1] Materials relating to Hyderabad have been drawn from a specially prepared note on 'Conservation in Hyderabad State', by Dr. P. Sreenivasachar, Director of Archaeology, Hyderabad State, for which my thanks are due to him.

[2] G. Yazdani in J. Cumming, *Revealing India's Past* (London, 1939) pp. 254-55.

[3] *Ibid.*, p. 255.

The technical methods of chemical preservation adopted by the Italian experts and after them by the technical staff of the Hyderabad State has been described in detail in the various Annual Reports of the Hyderabad Department.[1] In view of the fact that art-critics and connoisseurs all over the world are jealous in guarding these rich treasures of the early artistic heritage of the world, no pains have been spared or will be spared to obtain the best advice available and implement fully whatever decisions have been arrived at in the interests of these paintings.

Many of the structural monuments raised difficult problems of conservation, being structures of large blocks of stones with little mortar, and whenever the foundations gave way through subsoil shrinkage, routine-measures proved futile. The *śikharas* of *temples* such as of PĀLAMPEṬ, noted for their beautiful *nāyikā* figures, presented a different problem. Their superstructure has been rendered light through substitution of brickwork for stone. The *śikharas* and roof have been watertightened, overhanging blocks underpinned and cracks filled up. The *temples* of DICHPALLI (Nizāmābad District) and RAMAPPĀ (Warangal District) and other temples of the Chāḷukya style, which are unique not only in their artistic value but also in their size, in their high stylobate, in their peculiar star-shape plan, in the harmonious blend of the vertical and the horizontal lines achieved by a perfect arrangement of the walls of the triple shrines and the *maṇḍapas* and the horizontal courses of sculpture at the bottom, had their conservation effected in a manner suggesting that it had been an ever-recurring attempt to study the problems individually in the particular background of the soil-conditions, foundations, lateral stress, buttressing walls, counter-weight on flat roofs of *maṇḍapas* and so on. The solution in most cases has been far too expensive.

The Deccan has been the land of forts on hills and on plains, and striking examples of military architecture testify to the skill of the Hindus in the art and science of war from very early times. The size of the stones used is a noteworthy feature as in the enormous walls, a capital instance of which is seen in the *fort-wall* of RAICHUR of a stone, 41 ft. 6 in. long, with an interesting carving of how it was transported by means of a four-wheeled cart and countless bullocks. The irregular form of stones, the entire absence of the use of cement of any kind and the joints of the stones perfectly chiselled and laid one above the other being kept together only by their enormous weight—these are other special features which make their conservation expensive and difficult.

When the Muslims began to build forts in the Deccan or remodel the older ones which they conquered, they were naturally influenced by Turkish officers and engineers from about the second half of the fifteenth century. Some of these forts naturally bear a striking resemblance to the medieval European forts.

I. WESTERN CIRCLE, BARODA

The Western Circle comprises a notable group of Muslim monuments at Ahmedabad, Sarkhej and Champāner, built by the Aḥmad Shāhī rulers of Gujarat during the fifteenth and sixteenth centuries and representing the product of the co-mingling of Hindu and Muslim craftsmanships. The buildings at AHMEDABAD, of which the chief are the *Jāmi Masjid*, with a vast open courtyard, *Sīdi Sayyid's mosque*, with remarkble perforated windows, and *Rānī Siprī's mosque*, a delicate architectural piece, have been engaging the attention of the Archaeological Survey from the beginning of the century, when modern accretions were removed and the precincts restored to their original state. In a growing industrial

[1] *An. Reps. Arch. Deptt. Nizam's Dominions.*

city like Ahmedabad, constant vigilance has to be maintained against encroachments on the surroundings of monuments.

At CHAMPĀNER, the capital of Maḥmud Begarha (1459-1511), the *Jāmi Masjid*, with eleven large domes on the roof and exquisitely carved ceilings and balconies, and other monuments, such as *the tomb of Sikandar Shāh, Naginā Masjid, Līlā Gumbad kī Masjid*, etc., to name a few out of a long list, receive regular attention.

Of the monuments included in the late Baroda State, now merged into Bombay State, the Sun temple at Moḍherā and the Sahasraliṅga tank at Pāṭan deserve special mention. The *Sun temple* at MOḌHERĀ, an eleventh-century construction with a profusely carved exterior and perforated screen-windows, has been saved from further decay through the efforts of Baroda State. The core-stones of its missing *śikhara* have been reset and cracked lintels supported by masonry piles, which have eventually to be removed and replaced by more elegant devices.

The *Sahasraliṅga tank* at PĀṬAN, an enormous reservoir built by one Durlabharāja and repaired and renovated by Siddharāja Jayasiṁha (1094-1143), was buried under a thick deposit of sand about 20 ft. in depth. The excavation undertaken by the Baroda State has revealed about three-fourths of its outline and exposed a complex of structures connected with it and consisting of a Śiva temple of marble, two pavilions, together with a colonnade of fortyeight pillars, feeding channels from the adjoining river Sarasvatī, a silt-chamber, a locking-up arrangement, inlet-sluices and a waste-weir. These remains have been thoroughly conserved and now give an idea of the enormity and importance of the tank.

The monuments of national importance in southern part of Rājasthān have now been added to the Western Circle. Of the important monuments in this region, mention should be made of the *fort* at CHITOR, the structures of which chiefly date from the time of the Guhilot princes of Mewār. When the monuments were taken over they were in a deplorable state. In fact, except the two famous towers, viz. the Jaya-stambha and the Kīrti-stambha, all the other monuments were found in a dilapidated condition, full of débris and overgrown with vegetation. The broken wall-tops were overlain with loose stones, and cracks were visible nearly everywhere. After a thorough survey conservation-measures were proposed for a large number of monuments in an order of priority. Besides such measures as extensive repairs and débris-clearance, a general improvement of the fort in consonance with its historical importance were also proposed. Repairs have been undertaken this year according to this scheme on a large scale, beginning with Rānā Kumbha's palace, Śringār Chauri and the citadel-wall.

ARCHAEOLOGICAL CHEMISTRY AND SCIENTIFIC STUDIES

By Dr. B. B. Lal

CONTENTS

1. INTRODUCTION

THE Archaeological Survey of India was re-organized in 1902 with the object of looking after the archaeological remains of this vast country and exploring and excavating new sites with a view to revealing India's ancient past. With the passage of time the activities of the Survey increased rapidly, and the need was felt for putting the preservation of ancient remains, antiquities and museum-exhibits on a firm scientific basis. To meet this need, the Chemical Branch of the Survey was established in 1917 with the appointment of an Archaeological Chemist, whose primary duty was to be the scientific examination and chemical treatment and preservation of museum-objects and other antiquities recovered in the course of excavations and explorations. The laboratory of the Archaeological Chemist, at first organized in the Indian Museum, Calcutta, and later on shifted to Dehra Dun, conducted this work on the lines of the British Museum Laboratory, where Sir Alexander Scott had developed important methods of the chemical preservation of metals, alloys, terracotta, glass, faïence, textiles, prints, drawings and other types of antiquities. The application of these scientific methods of preservation of antiquities to the Indian material under the supervision of the Archaeological Chemist yielded satisfactory results and created considerable enthusiasm among art-collectors, museum-curators, archaeological officers and others interested in the preservation of our cultural heritage. The result was a tremendous expansion of the activities of the Archaeological Chemist, and the preservation of antiquities, paintings, rock-cut caves, temples, sculptures, inscriptions, etc., became an important function of the Chemical Branch. Large-scale chemical preservation of monuments was begun in 1937, when the decaying sculptures of the famous caves at Elephanta were chemically treated with very spectacular results. This type of preservation-work has since been extended to a large number of monuments.

The growth and development of archaeological chemistry in India during the period of more than three decades—from 1917 to the present day—could not remain isolated from the scientific progress in other countries, which had made rapid strides in researches in chemistry, physics and geology, as a result of which numerous techniques, of immense use in the scientific conservation of ancient monuments and cultural relics of various kinds, had been developed. Most of these methods were adopted by the Chemical Branch in its own work, for it was soon realized that the interpretation of ancient Indian techniques and materials could be carried out best by the application of the results of research in these various branches of science; consequently, chemical analysis, scientific examination and microscopic investigation of specimens of various kinds, such as mortar and plaster, glass and glaze, terracotta and faience, metals and alloys and pigments and painted stuccos from mural paintings were systematically carried out. Some of the salient activities of the Branch are discussed and the methods and techniques that have been evolved as a result of research in the laboratory and experimental work in the field are described below.

2. ANALYTICAL CHEMISTRY AND ARCHAEOLOGICAL PROBLEMS

The rôle played by analytical chemistry in the solution of archaeological problems, such as the composition of metals and alloys, the techniques of manufacturing glass, glaze, terracotta and faience and other allied problems, was recognized long ago by western scientists, who carried out a great deal of analytical work, the results of which have been admirably summarized in a recent article by Caley.[1] The young science of archaeological chemistry is actually based on the pioneering work done by western scientists; the Archaeological Survey did not lag behind in the application of the methods of analytical chemistry to archaeological problems, and intensive analytical work done during the last thirtysix years has produced important and interesting results.

A. Ceramics

The materials excavated at Mohenjo-daro and Harappā have been chemically analysed and examined in great detail,[2] and the results throw much light on the development of the material civilization of protohistoric India as revealed at these two important sites. Similarly, specimens of glass and glaze unearthed at Taxila and other Buddhist sites have been analysed[3] and much information obtained about the state of technical knowledge that existed in India during the historical period. The results of chemical analysis of glass specimens from Nālandā, Arikamedu, Ahichchhatrā and other places have already been partly published,[4] and others are in the course of publication. These results are of great value in determining the composition and origin of the raw materials used in their manufacture. An intensive programme of research on ancient and medieval ceramics has been put through recently, and a systematic research on the

[1] E. R. Caley, 'Early history and literature of archaeological chemistry', *Chemical Education*, XXVIII (1951), pp. 64-66.

[2] John Marshall, *Mohenjo-daro and the Indus Civilization* (London, 1931), II, pp. 574-78; M. S. Vats, *Excavations at Harappā* (Delhi, 1940), I, pp. 468-69.

[3] *An. Rep. Arch. Surv. Ind.*, 1921-22 (1924), pp. 125; 1922-23 (1925), p. 158.

[4] B. B. Lal, 'Examination of some ancient Indian glass specimens', *Ancient India*, no. 8 (1952), pp. 17-27.

glaze of various periods has been undertaken; the results of these investigations will be published in due course. As an example of the interesting results that can be obtained by such researches, it may be stated that investigation in connexion with the glazed tiles from Chīnī-kā-Rauzā ('mausoleum of China tiles') at Agra has shown that their composition differs from that of the Chinese glaze and, therefore, it is evident that these tiles were manufactured not by Chinese but Persian craftsmen or their Indian pupils.

Glazed tiles of different colours from Sher Shāh's tomb at Sāsārām and from a mosque at Nārnaul in PEPSU have been analysed and the results published.[1] The results of research into the composition and technique of glazed pottery of Kushan times have also been briefly reported on,[2] and a detailed paper will be published in due course.

This investigation into ancient and medieval ceramics has not been confined to glass and glaze specimens but has been extended to ordinary terracotta and pottery. The Northern Black Polished Ware, with which every Indian archaeologist is familiar (above, p. 119), has presented a difficult problem to the chemist. Some work has already been conducted with a view to determining the technique of fabrication of this Ware, and in the course of this research several analyses have been undertaken. The results of this preliminary investigation have already been published,[3] but the problem cannot be considered to have been solved beyond doubt, and investigations are still under way to determine unequivocally the technique of its manufacture. In this connexion it may be remarked that chemical analysis of a number of glazed celadon ware specimens unearthed in the course of excavation at Arikameḍu has helped to fix the date of the fabrication of this ware on internal evidence,[4] and this agrees closely with the date arrived at from the study of the relics of known date found in association with this ware.

The distinctive pottery of different ages and localities, e.g. the Painted Grey Ware of northern India (above, p. 93), the Red Polished Ware of western India (above, p. 158), the russet-coloured pottery recovered from the Āndhra levels at various sites in south India and the Deccan (above, p. 163), and the Black-and-red Ware found in the south Indian megaliths (above, p. 110)—all require scientific investigation and research for the determination of the technique of their manufacture, which will be undertaken shortly.

B. Metallurgy

The application of chemical analysis to archaeological problems, which has proved significant in the study of ancient Indian ceramics, has been found to be equally useful in the investigation of metallurgical and metallographic problems presented by metal- and alloy-specimens recovered in the course of excavations. The results of most of these investigations have already been published. Thus, the analysis of specimens from Mohenjo-daro and Harappā has led to important and interesting results[5] and has shown that the ancient craftsmen had attained a very high degree of skill in metallurgy. Bronze was well-known and used on a fairly large scale, while the technique of its casting and working had also been developed considerably. The chemical composition of the

[1] B. B. Lal, 'Composition and technique of some glazed tiles from historic monuments', *Science and Culture*, XIX (1953), pp. 244-66.

[2] B. B. Lal in *Current Science*, no. 22 (Jan. 1953), pp. 7-8.

[3] *Ancient India*, no. 1 (1946), pp. 58-59.

[4] *Ibid.*, no. 2 (1946), pp. 94-95.

[5] Marshall, *op. cit.*, II, pp. 484 ff.; Vats, *op. cit.*, I, pp. 378 ff.

Nālandā bronzes has been studied, and the results of this investigation are in the course of publication. A systematic metallographic examination of the bronzes is already under way, and the results of this work will be available in due course. It is also proposed to publish the results of analysis recently carried out on a large number of coins from Ahichchhatrā. Although metallographic data on these coins are not yet available, it may be mentioned that most of these coins contain appreciable quantities of antimony, and some contain lead as well. Several objects from Brahmagiri have also been analysed and found to be variously composed of bronze and copper. It is proposed to complete the examination of ancient metals and alloys by undertaking a systematic metallographic investigation, in order to determine the technique of manufacture. It is also desirable to carry out a complete chemical and metallographic examination of datable metal- and alloys-specimens from sites of known dates in order to assess the extent of technical skill and metallurgical development through the ages.

3. PRESERVATION OF ANCIENT MONUMENTS

The problems of preservation of stone monuments, such as rock-cut caves, temples, sculptures, inscriptions, etc., all over the country, exposed that they are to varying elemental forces, are extremely complicated, and their preservation is a very difficult task indeed. The climatic factors, including the temperature- and humidity-conditions, atmospheric pollution and the salinity of soil are different in different parts of the country. In view of the varying factors it is almost impossible to work out uniform methods which will hold good for all monuments in the country. Moreover, the materials used in the construction of ancient monuments are of a widely different nature, and as such the problems of each monument have to be studied and examined with a view to determining the causes of its decay before suitable preservative measures can be devised to arrest the progress of decay and save it from further disintegration. It need hardly be emphasized that petrological investigations are of great importance in such work and microscopic examination of rock-specimens has, therefore, to be undertaken as a preliminary to devising chemical methods of preservation. Consequently, the Chemical Branch has been reinforced by the addition of a petrological section, the primary object of which is to determine the minerological composition of the original rock and the alteration of minerals as a result of weathering. The determination of micro-structure, porosity, water-absorption and saturation-coefficient, the study of which is so necessary for assessing with some degree of precision the weathering properties of building materials, also falls within its purview.

As a result of this development, the chemical conservation of ancient monuments has been based on a firm scientific basis, and it has been found that results of petrographic investigation, coupled with analytical data, give a clear insight into the causes of decay of stonework. In most cases the injurious soluble salts have been found to be responsible for the decay and disintegration of stone used in various monuments. It is proposed to publish brief but complete reports on groups of monuments incorporating therein the results of petrographic investigation and chemical analysis. It may be added that already large-scale chemical preservation has been carried out at Elephanta, Kārla, Bhājā and Kanherī in Bombay State; Konārak, Bhuvaneśwar, Udayagiri and Khaṇḍagiri in Orissa State; Nālandā, Lauriyā Nandangarh and Maner in Bihar State; and Agra and Fatehpur Sīkrī in Uttar Pradesh. It is also proposed to undertake extensive work at the temple at Baijnāth in Kāngrā District, Panjab; several temples at Bhuvaneśwar; Khajurāho in Vindhya Pradesh; and Sānchī in Bhopal. The measures adopted by the Chemical Branch

have already proved to be highly successful, and as a result thereof many sculptures have been rescued from decay which had assumed alarming proportions.

The techniques and materials employed in these works may now be briefly described. In most cases the chemical preservation has consisted in the elimination of soluble salts from the affected sculptures, the eradication of moss and lichen, the prevention or reduction of the solvent action of rain-water and the preservation with vinyl acetate solution or methyl-metha-crylate resin. The results of large-scale fungicidal treatment carried out at several sites by employing 1-2 per cent solution of zinc silicoflouride have been fully successful and confirm the results reported by western scientists. It can be said with confidence that the problem of eradication of moss and lichen has been effectively solved, and the disfigurement and decay caused by the algal growth can be completely eliminated by this method. The efficacy of this method can be judged from the work done at Bhuvaneśwar, where a number of sculptures belonging to the Paraśurāmeśvara and Mukteśvara temples (pls. XCV and XCVI) were subjected to fungicidal treatment with zinc silicoflouride, and it is gratifying to note that even now, seven or eight years after their treatment, they are in a very good state of preservation and are free from algae.

While chemical work has been conducted at numerous sites, it is desirable to emphasize the complexities involved in the work when temples and structures of colossal dimensions are involved. The Sun temple at Konārak, Shore temple at Mahābalipuram and Temple 3 at Nālandā serve to spotlight these complexities. The gigantic Konārak temple (pl. LXXXVI) is built of a highly ferrugenous khandolite stone, which is a garnetiferous sillimanite schist. The rock has weathered considerably; felspars have been kaolinized, garnets have been limonitized and the alkalis have been leached out as a result of these alterations. Chemical analysis of a large number of rock-specimens in different stages of weathering has confirmed the leaching of alkalis, elimination of silica and concentration of iron and alumina. Petrological investigation has led to similar conclusions. There is, therefore, no doubt that this process of weathering is akin to lateritization. The problem of preservation of the temple has been considerably complicated by its proximity to the sea, for sea-salts present in the atmosphere have been playing havoc with the sculptures. The attrition caused by dust- and salt-laden winds and the disintegration of the rock caused by crystallization and solution of salts have reduced most of the sculptures to mere skeletons, and the weathered rock presents a very ugly appearance on account of distinct patches of white kaolin and brown limonite. While chemical conservation carried out in the past has helped to lessen the intensity of weathering, the stonework has nevertheless been deteriorating slowly. Consequently the Government of India appointed a committee of experts to go into the whole question of the preservation of this unique temple. The findings of the committee are being adopted for the preservation of the priceless sculptures on the temple, but it may be emphasized that so far no rock-preservative has been evolved which can consolidate and strengthen huge monuments exposed to sun and rain and protect them for an indefinite period, and the measures that have been recommended will have to be repeated periodically as need arises. This work is in progress.

Another extremely difficult problem of conservation is that of the Shore temple at Mahābalipuram. This temple is virtually saturated with sea-salts due to the direct beating of waves which has been going on for centuries. The coarse-grained rock of the temple is being reduced to powder bit by bit, and since the supply of soluble salts is perennial because of salt-laden winds and spraying which continue to deposit salts on the temple, all attempts at chemical conservation of this unique monument have been

abandoned. In fact the chemical treatment is likely to do more damage than good because of the extreme environmental conditions prevailing in the area.

A third difficult problem of chemical conservation of exposed monuments was presented by the stucco-figures of Temple 3 at Nālandā (pl. LXVII). These figures were found to be impregnated with injurious soluble salts. For their preservation the entire structure was rendered watertight, and the images freed from soluble salts by repeated applications of wet paper-pulp, after which they were preserved with 5 per cent vinyl acetate solution. The treatment has proved quite effective, and these beautiful figures (pl. LXVIII) are likely to remain in a satisfactory state of preservation for some years to come.

The problems of the decay of ancient monuments, the work conducted with a view to determining the causes of the decay and the measures for their scientific conservation may now be briefly described. Generally speaking, the more important causes of decay of stone monuments in India are injurious soluble salts, considerable fluctuations in temperature and heavy rainfall. Some of the monuments are of colossal dimensions, and it is difficult to check the solvent action of rain-water and the attrition caused by winds. Fluctuations in temperature bring about flaking and cracking of the rock, and the salts cause enormous damage due to repeated crystallization and solution under suitable conditions of temperature and humidity. The choice of a suitable stone preservative is extremely limited. Waterproofing materials, such as oil-paint, linseed oil and similar preparations, are out of the question as they cannot be used without disfiguring the monuments. Some of the reagents which can be used on stone monuments have been found to exert deleterious effects on the rock itself, while others cause flaking and exfoliation of the rock. Prolonged fieldwork has shown that neither a thin solution of vinyl acetate or methyl-metha-crylate nor hard paraffin wax can be expected to be of more than limited efficacy. Field-tests have shown that some preservatives possess little adhesion, as they are washed off by the first few showers of rain, and others show very little penetrability and form a superficial skin on the surface of the rock. These results are of a negative character, but a study of literature on the subject shows that no preservative has been evolved which can offer permanent protection to the surface, consolidate the rock as a whole and is suitable in every way in varying climatic conditions. While the quest for a suitable preservative must continue, research is being undertaken by the Chemical Branch with a view to evolving a suitable reagent or formula for the most suitable preservative. For this purpose synthetic resins like vinyl acetate, methyl-metha-crylate and polystyrene, tornesite, hard paraffin wax, etc., are being studied. So far only methyl-metha-crylate has been found to give partially satisfactory results. It is proposed to experiment with aqueous emulsions of some of these resins with a view to determining their preservative properties. The use of silicon ester advocated in some quarters has been found to be of little value.

4. PRESERVATION OF MURAL PAINTINGS

Some of the ancient monuments are embellished with mural paintings which stand in need of treatment and preservation. Considerable work has been carried out on the wall-paintings at Sītābhinji in Orissa; Fatehpur Sīkrī and Madanpur in Uttar Pradesh; Tambekarwāḍā, Aṣār Mahal and Kumutgi in Baroda and Bījāpur Districts of Bombay State; Hoshāngābad, Pachmarhī and Chāndā (pls. XCVII-C) in Madhya Pradesh; Tanjore (pl. CI), Sittannavāsal, Conjeevaram, Tirumalai and Tirumalaipuram in Madras State; Lepākshī in Andhra State; and several other sites. The problems involved in these

murals are extremely complex due to several factors, such as the existence of two layers of paintings at Tanjore (pl. CII), Śittannavāsal and Ellora; heavy accretions of smoke and soot at Bāgh, Chāndā, Badāmi and other places; and a general extensive flaking of the pigments on account of the deterioration of the binding medium originally used as an adhesive for fixing the pigments to the ground. Suitable cleansing reagents, detergents and emulsions have been evolved by research and it has been possible to remove heavy accretions of oil, smoke, etc., and expose the paintings in their original colours. The use of such preservatives as mastic in turpentine, shellac in rectified spirit and paraffin wax, which had been used in the past at Ajaṇṭā and other places, for fixing the flaking pigments to the ground had to be discontinued as a result of better materials being placed at our disposal by modern science.

5. THE TECHNIQUE OF PAINTING

Most of the wall-paintings in India, including the world-famous paintings at Ajaṇṭā, Ellora and Bāgh and the lesser known but still important ones at Tanjore, Panamalai, Somapalle and Aihole, have been scientifically surveyed and examined with a view to determining the technique of painting process at each place and evolving suitable preservative methods. As a result of detailed investigations into these paintings, it can now be concluded that the technique adopted at Ajaṇṭā, Ellora, Bāgh, Sitābhinjī, Badāmi, Śittannavāsal and Conjeevaram, which cover a period of nearly half-a-millennium of classical pictorial tradition, was tempera, and the use of water-souble binding medium has been confirmed by laboratory-tests in all these cases. The paintings of the later period, such as the Choḷa paintings in the Bṛihadīśvara temple at Tanjore (pl. CI), the Vijayanagara paintings at Lepākshī and Somapalle and the still later Nāyaka paintings, again at Tanjore, have also been found to have been executed in the same technique. There is, therefore, no doubt that the technique, as revealed by the study of murals dating from the second century B.C. to fifteenth-sixteenth century A.D., was all along tempera, and genuine fresco-technique (Buon fresco), which involves the use of pigments ground in water only without the incorporation of any binding medium on fresh lime-plaster, was not used by ancient artists. The result is in agreement with the technical details about the preparation of surface for wall-paintings and the application of different kinds of colours together with the process of tinting and shading as preserved in Sanskrit texts on paintings, such as the *Vishṇu-dharmottara*,[1] *Śilparatna*, etc. Wall-paintings of a later period, such as those found in the Mughul buildings at Agra and Fatehpur Sīkrī and in the palaces in Kāngrā, Bundelkhanḍ and Rājasthān are being surveyed and scientifically examined along these lines.

6. GEOCHRONOLOGICAL INVESTIGATIONS

A. SOIL-PROFILE

Indian archaeology has so far concerned itself solely with the study of cultural aspects of the material remains of the past, and little attention has been paid to the study of environmental conditions in which the various cultures flourished. In the course of excavations various layers of sedimentary deposits are exposed, and a chemical and mechanical study of soils from various layers is of great importance in the reconstruction

[1] S. Kramrisch, *Vishṇudharmotta*, pt. iii, 2nd ed. (Calcutta, 1938).

of the conditions under which the various deposits were laid. Similarly, the determination of the phosphate-content of soil from various layers is helpful in understanding the distribution of population. It is, therefore, important that investigations into the soil-profiles exposed in the course of excavations should be systematically conducted. A beginning has already been made in this direction, and soil-samples from excavations at Bahādarābād in Sahāranpur District have been subjected to chemical and mechanical analysis with very interesting results.

B. Fluorine test

In the west considerable attention has been paid to the application of fluorine test to problems of prehistoric archaeology for determining the dates of prehistoric sites and remains. With the exception of one or two stray analyses, no systematic work has been conducted in India on this line. It is proposed to subject bone-materials found at prehistoric sites to fluorine test and collect suitable data which, in the course of time, can be utilized in establishing a chronological sequence and even in dating prehistorical sites. Already there is a growing interest among the Indian prehistorians in the problem of the fossil man, and therefore, it would be in the fitness of things that fluorine test should be applied wherever prehistoric remains of human or animal bones are unearthed.

EPIGRAPHICAL RESEARCH

By B. Ch. Chhabra, D. C. Sircar and Z. A. Desai

CONTENTS

1. EPIGRAPHY AND THE ARCHAEOLOGICAL SURVEY

By B. Ch. Chhabra

A RETROSPECTIVE glance over the ground covered during the fifty years under review, so far as epigraphical research in India is concerned, fills one with a sense of pride and satisfaction. It is a record of world scholarship working in unison for the cause of Indian history dating from the remote past. As a result of sustained efforts and devoted labour on the part of research-workers in the field, who, by the way, count among themselves many a savant of international repute, much has been retrieved from oblivion, revealing light has been thrown on many an obscure corner, and glorious chapters, one after another, have been added to the history as it is being reconstructed. It is indeed very difficult to form a correct estimate of the extent to which history, or rather historiography, in India has been benefited by epigraphy. It is simply immense!

The turn of the century, early in 1902, saw the Department of Archaeology in India enlarged and re-organized by its newly-appointed Director General, John H. Marshall, with the liberal support of the Government under the Viceroyalty of Lord Curzon. The Department started an annual publication, called the *Annual Report of the Archaeological Survey of India*, as its principal organ, in order to keep the scholarly world as well as the enlightened public abreast of the activities of the Department. Summing up its aims and objects, Marshall said: 'It will now be plain to the reader that, as the scope of this "Annual" is to be co-extensive with current archaeological operations, the contents will relate first and principally to Conservation, secondly, to Exploration and Research, and lastly, to Epigraphy.'[1] Consequently, a substantial portion of this *Annual*, from year to year, was devoted to the announcement of fresh epigraphical discoveries, to their decipherment and interpretation, often in great detail, and to the distinct contribution such finds made to our knowledge of India's past. Though 'Epigraphy' is placed last among the archaeological operations, there is no gainsaying that it is Epigraphy that has yielded the most authentic data for the reconstruction of India's ancient history, not only political and administrative, but also religious, cultural, social and commercial. In addition, much welcome light is shed thereby on the contemporary literature and linguistics.

It is exceedingly gratifying to note that, at the time of writing this account, the father of the re-organized Department of Archaeology, Sir John Marshall, and one of his chief associates and colleagues, viz. Professor Dr. J. Ph. Vogel, whose scholarly contributions in the realm of Indian epigraphy, art and archaeology as also in that of Sanskrit literature are too well-known, are not only still in our midst but are also active in their scholarly pursuits, guiding the younger generation by their shining examples.

The turn of the century marked the second phase in the sphere of epigraphical research in India. Following the efforts of pioneers in the field, like Charles Masson and James Prinsep, the keys to the Kharoshṭhī and Brāhmī scripts had been found (above, p. 7). Legends on Indo-Bactrian and Western Kshatrapa coins had been deciphered and published, as also the inscriptions of Aśoka[2]. Fleet had edited the inscriptions of the Gupta emperors, including those of their contemporary rulers and their successors till then known.[3] Hultzsch, to whom we owe a revised edition of Aśoka's edicts,[4] had published many inscriptions of south India,[5] notably those of the Pallavas, about whom the subsequent epigraphical discoveries furnished us with considerable additional information. Contributions by other prominent scholars, like A. C. Burnell, Rudolf Hoernle, Georg Bühler, Franz Kielhorn, Heinrich Lüders, James Burgess, Bhau Daji, Bhagawanlal Indraji and Ramakrishna Gopal Bhandarkar, had equally enriched the growing epigraphical literature in India. Bühler, Kielhorn, Lüders and many others of the older generation continued their research even afterwards, extending to the second phase.

If we turn the pages of earlier volumes of the *Annual Report of the Archaeological Survey of India*, we find J. Ph. Vogel discovering Śāradā inscriptions in the Panjab Hill State of

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[1] *An. Rep. Arch. Surv. Ind.*, 1902-03 (1904), p. 12.

[2] A. Cunningham, *Inscriptions of Asoka*, Corpus Inscriptionum Indicarum, I (Calcutta, 1877).

[3] J. F. Fleet, *Inscriptions of the Early Gupta Kings and their Successors*, Corpus Inscriptionum Indicarum, III (Calcutta, 1888).

[4] E. Hultzsch, *Inscriptions of Asoka*, Corpus Inscriptionum Indicarum, I, new edition (London, 1925).

[5] E. Hultzsch, *South Indian Inscriptions*, I-III (Madras, 1890-1929).

Chambā in the Himālayas[1] and J. Bloch and D. B. Spooner unearthing hundreds of terracotta seals and sealings at Basārh (ancient Vaiśāli) in Bihar[2]. Vogel's explorations in Chambā State continued for about eight seasons during which he discovered a wealth of epigraphical material. He divided this material into two parts: (1) of pre-Muhammadan period and (2) of medieval and late period. The first is comprised in his masterly treatise entitled *Antiquities of Chamba State.*[3] The second part he left unedited but is now under publication, having been edited by one of his pupils, viz. the writer of this article The numerous seals and sealings of Basārh constitute a category of records quite distinct by themselves. This class of inscriptions has been very largely augmented by similar discoveries made subsequently at several other ancient sites like Kasiā,[4] Saheṭh-Maheṭh,[5] Bhīṭā,[6] Sunet, Nālandā,[7] Rājghāṭ[8] and Kauśāmbī, not to mention many a minor one. It is well-known to the student of Indian epigraphy how varied the contents are of the legends or inscriptions on these sealings: names of individuals, gods, temples, monasteries, guilds, places, as also titles and designations of various officials and dignitaries. These short records are a regular mine of information on various topics and, as such, deserve to be published all together at one place. As a matter of fact, a separate corpus volume ought to be devoted to these seals and sealings.

By far the most outstanding epigraphical discovery during the period under review is the seals discovered at Mohenjo-daro and Harappā, now in west Pakistan. As is well-known, the script of their legends, half pictorial and half symbolic, is an enigma to the whole world. Many scholars, both Indian and foreign, are busy in solving this riddle. Though much has been written on the subject, yet nobody seems to have hit the nail on the head so far.

A part of the re-organization of the Archaeological Survey of India was the setting up of a regular Epigraphical Branch with the express purpose of collecting inscriptions and publishing them. Dr. Hultzsch was the first Government Epigraphist for India. He had formerly been doing Dravidian epigraphy. At the time of the re-organization, however, he was about to retire. After him a Norwegian scholar, Dr. Sten Konow, was in charge of Indian epigraphy. He made a name for himself in the field of Kharoshṭhī inscriptions. For some time Professor F. W. Thomas of Oxford also conducted the affairs of the Epigraphical Branch, though he did not come to India for that purpose. Much of the work was done by Rao Bahadur V. Venkayya, formerly an assistant under Hultzsch. In course of time Venkayya became the Government Epigraphist. The post was later held in succession by Rao Bahadur H. Krishna Sastri, Dr. Hirananda Sastri, Dr. N. P. Chakravarti, Rao Bahadur Krishnamacharlu and the writer of this article.

The Epigraphical Branch conducted village-to-village surveys and collected on an average six hundred inscriptions every year, the bulk coming from the south India. Those discovered in the north, though fewer in number, included some very early and highly important records, specially the Kushan inscriptions from Mathurā and Taxila. The discovery of the rock inscription of Khāravela at Hāthigumphā near Bhuvaneśwar in

[1] *An. Rep. Arch. Surv. Ind.*, 1902-3, pp. 239-71.

[2] Th. Bloch, *ibid.*, 1903-04 (1906), pp. 101 ff.; D. B. Spooner, *ibid.*, 1913-14 (1917), pp. 110 ff.

[3] J. Ph. Vogel, *Antiquities of Chamba State*, pt. i, Arch. Surv. Ind., New Imp. Series, XXXVI (Calcutta, 1911).

[4] *An. Rep. Arch. Surv. Ind.*, 1905-06 (1909), p. 83; 1906-07 (1909), pp. 63 ff.

[5] *Ibid.*, 1910-11 (1914), pp. 19 ff.

[6] *Ibid.*, 1911-12 (1915), pp. 44 ff.

[7] H. Sastri, *Nālandā and its Epigraphic Material*, Mem. Arch. Surv. Ind., no. 66 (1942).

[8] Krishna Deva, 'Coin devices on Rajghat seals', *Jour. Numismatic Soc. Ind.*, III pt. 2(1941), pp. 73 ff.

Orissa was as important as that of Aśoka's edicts.[1] The period under review saw the discovery of additional inscriptions of Aśoka, the most conspicuous being that of Maski in Hyderabad, Deccan. This is the only record so far discovered wherein the emperor's personal name *Asoka* is specifically mentioned, all the remaining ones referring to him by his popular title *Devānāmpriya.*

It is not the purpose of this paper to review any of the important epigraphical discoveries that fall within the last half-a-century. Rather, we may broadly indicate the stage reached by the researches in this line. The thirty thousand and odd inscriptions brought to light have naturally changed the face of ancient Indian history. The new material placed at the disposal of the historians has not only added largely to our knowledge but also altered and corrected it in many places. A stage was reached when Aśokan inscriptions required to be re-edited, and this want was adequately fulfilled by the revised edition by Hultzsch.[2] Similarly, Fleet's volume on Gupta inscriptions called for a revision. Not only many additional Gupta inscriptions had come to light, but in the light of further researches Fleet's interpretation at places had to be modified. The task of re-editing Gupta inscriptions was entrusted to Dr. D. R. Bhandarkar, who spent years working on it but unfortunately could not see the results of his labour appear in print. He left the work almost finished in the rough typescript, which is being revised and press-dressed and is expected to be published before long. The Kharoshṭhī inscriptions other than those of Aśoka have been dealt with by Konow in a separate corpus volume.[3] Another volume of non-Aśokan Brāhmī inscriptions had likewise been projected, and the work was entrusted to Lüders, who, like Bhandarkar, spent years in accomplishing the task. It is a matter of great regret, however, that the manuscript-material of his work was partly destroyed or lost during the last World War. Lüders has left a sample of the erudite scholarship, which was to be seen throughout his work had it survived, in an article of his on 'Seven Brahmi Inscriptions from Mathura and its vicinity' published in a not very distant issue of the *Epigraphia Indica.*[4] It is quite likely that a part of Lüders' manuscript, dealing with the Brāhmī inscriptions from Bharhut, which has survived, may be published by the Department.

The two World Wars seriously hampered the publication-activity of the Epigraphical Branch, though its collection-work, acquisition of fresh epigraphs, either by village-to-village survey or through exploration or excavation, or on private information, has gone on more or less steadily from year to year. As a result thereof, the publication has lagged far behind the collection. The limited resources, in funds and personnel, of the Department have added to the difficulties. In spite of all this, several volumes of the *South Indian Inscriptions (Texts)* series have been published in recent years, while the quarterly journal entitled *Epigraphia Indica* has continued to appear, though it often fell into arrears, and during the Second World War its publication was suspended. The publication of the *Annual Report of the Archaeological Survey of India* was stopped after the publication of the Report for 1937-38, with the result that the valuable epigraphical résumés it contained are no longer available to the public. To make up for the loss, a decennial report covering the period 1937-46 was published in an earlier number of *Ancient India.*[5] In 1946 it was

[1] K. P. Jayaswal and R. D. Banerji, 'The Hathigumpha inscription of Kharavela', *Epigraphia Indica*, XX (1929-30) pp. 71-89.

[2] Hultzsch, *op. cit.* (1925).

[3] Sten Konow, *Kharoshṭhī Inscriptions*, Corpus Inscriptionum Indicarum, II, pt. i (Calcutta, 1929).

[4] H. Lüders, 'Seven Brahmi inscriptions from Mathura and its vicinity', *Epigraphia Indica*, XXIV (1937-38) pp. 194-210.

[5] B. Ch. Chhabra, N. L. Rao and M. Ashraf Husain, 'Ten years of Indian epigraphy (1937-46)', *Ancient India*, no. 5 (1949), pp. 46-61.

decided that the scope of the *Annual Reports of South Indian Epigraphy*, published since 1905, should be enlarged to cover the whole of India. The first number of the new series, *Annual Report on Indian Epigraphy* for the year 1945-46, appeared in 1952, and the publication of the subsequent Reports is being speeded up.

After Fleet's volume on Gupta inscriptions, which constituted the third volume of the *Corpus Inscriptionum Indicarum* series, no further volume has been issued in this series. Volume IV, which comprises inscriptions of the Kalachuris and those dated in the Kalachuri era, assigned to Professor V. V. Mirashi of the University of Nagpur, is going through the press and is expected to be out very soon.

As indicated above, the publication-work is not keeping pace with the collection-work. The Department is fully alive to the urgency and importance of publishing the thousands of accumulated inscriptions awaiting to be published. A comprehensive scheme for the future volumes of the *Corpus Inscriptionum Indicarum* series, twenty in number, has been drawn up, indicating break-up and the assignment of different volumes to individual scholars, both in the Department and outside.

Before closing this fleeting survey, it may be recalled that Burma was formerly a part of India and constituted a separate Circle of the Archaeological Survey of India. That Circle also did much epigraphical work, reports on which by Mr. Taw Sein Ko and others are found in the *Annual Reports* of the Survey.

It may further be noted that in India itself, some of the princely States, such as Kashmir, Gwalior, Baroda, Mysore, Travancore and Hyderabad, had their own Departments of Archaeology, and in many cases their successors have retained these Departments. They also contributed much to the epigraphical wealth of the country. Besides, many a learned society in India, engaged upon Indological researches, such as the Asiatic Society (formerly known as the Asiatic Society of Bengal or Royal Asiatic Society of Bengal), the Bihar and Orissa Research Society and the Kannada Research Institute, has accomplished much of epigraphical research in India through its energetic members.

In this connexion we may also remember the co-operation received from the agencies working outside India. Similar researches done in Indonesia as well as in Thailand, Cambodia, Malaya, etc., had much in common with India.

The activities of the Department of Archaeology as a whole have increased very greatly after the attainment of political independence by India and on the merging of the States with the Union. The work in the Epigraphical Branch has also proportionately increased, calling for a reinforcement of the Branch. Steps are being taken in that direction.

The future of epigraphical research in India will depend upon the scholars trained in that line. At the present moment their number is woefully small and, what is worse, is dwindling day by day. Amongst the Indologists outside India there are very few who take interest in Indian epigraphy. The same may be said of those in India itself. Some of the universities in India have provision for teaching epigraphy, but not many students take advantage of that. To popularize this subject among the budding scholars is an uphill task indeed, and special efforts will have to be made for achieving success therein. It may, in fine, be observed that hundreds of ancient sites in India lie yet unexcavated and even unexplored and that each one of them holds out a promise of a wealth of epigraphical material, to do justice to which bands of trained epigraphists will be in demand for generations to come.

2. INSCRIPTIONS IN SANSKRITIC AND DRAVIDIAN LANGUAGES

By D. C. Sircar

Epigraphy is the study of inscriptions, and 'inscription' literally means any writing engraved on some object. In India, rocks as well as lithic, metallic, earthen or wooden pillars (pls. CIX and CX, 4), tablets, plates, pots (pl. CXII, 2), bricks (pl. CXII, 4) and other objects were generally used for incising inscriptions.[1] Often, writing in relief such as we find in the legends on coins (pl. CIV, 1-6) and seals (pls. CIII, CIV, 7 and CV), which are usually produced out of moulds or dies, and also records painted on cave walls or written in ink on wooden tablets are regarded as inscriptions, although these writings are not actually engraved. As is usually the case with inscriptions in the Perso-Arabic script, the letters of certain late medieval records are generally not engraved but are formed by scooping out the space around them.

A. Importance of epigraphy

For the ancient and medieval periods of Indian history, the study of inscriptions has a special importance. No doubt India contributed to the civilization of the world in all periods of history; but her more significant contributions to world culture were made in the early period. The study of early Indian history has, therefore, great importance to the student of the history of human civilization. Unfortunately, unlike Greece, Rome or China, ancient India has no history, because the Indians of antiquity did not care to leave written accounts of all their achievements. Ancient India did not produce a Herodotos, Thucydides or Tacitus to leave for posterity a genuine and comprehensive history of the achievements of her sons. Therefore, the information gathered from various sources, such as the literary, epigraphic, numismatic, archaeological and monumental records, is to be utilized to reconstruct this lost history of the most glorious days of India. Of all such sources for the reconstruction of early Indian history, epigraphic records are the most important, for they provide material for the major part of what we know about the achievements of the Indians of old.

Writing in 1839, Elphinstone observed in his famous *History of India* that in Indian history 'no date of a public event can be fixed before the invasion of Alexander and no connected relation of the national transactions can be attempted until up to the Muhammadan conquest'.[2] In 1866 Cowell accepted the truth of Elphinstone's dictum in regard to the whole of the so-called Hindu period of Indian history, for he pointed out that 'it is only at those points where other nations came into contact with the Hindus that we are able to settle any details accurately'.[3] But the activities of a multitude of scholars working in the various branches of ancient Indian history led to the gradual discovery and

[1] Occasionally epigraphs were engraved on conch (pl. CXII, 3) and tortoise shells, ivory plaques and other materials. Manuscripts and communications were usually written on birch-bark sheets, palmyra leaves, etc. Sometimes letters were merely scratched on palmyra leaves with styli. Often communications and documents were written on pieces of cloth, while there is also reference to manuscripts written on silk.

[2] M. Elphinstone, *History of India*, ed. E. B. Cowell, 5th ed. (London, 1866), p. 11.

[3] *Ibid.*; cf. V. A. Smith, *Early History of India*, 4th ed. (Oxford, 1924), p. 1.

accumulation of an unexpected wealth of material for its reconstruction. The achievements of ancient Indian rulers recorded in inscriptions on stone and copper plates were undoubtedly the most important of this. As early as 1837, the necessity of arranging epigraphical records systematically for the reconstruction of the ancient history of India was pointed out by James Prinsep, to whom goes the credit of first placing the study of Indian archaeology on a sound and critical foundation. Many inscriptions appeared in periodicals like the *Journal of the Asiatic Society* (published by the Asiatic Society, Calcutta, established in 1784), the *Indian Antiquary* (started by Burgess in 1872) and others.[1] Out of the numerous epigraphic records discovered till then, Alexander Cunningham collected those of Aśoka in a volume,[2] and J. F. Fleet edited the inscriptions of the Gupta age[3] as Epigraphist of the Government of India (1883-86). E. Hultzsch, as Epigraphist to the Government of Madras, 1886-1903, published the first volume of his *South Indian Inscriptions* in 1890. About a year earlier, Burgess, Cunningham's successor as Director General of the Archaeological Survey of India, started an official journal entitled *Epigraphia Indica* exclusively for the publication of inscriptions.[4]

B. Reconstruction of early Indian history

About the beginning of the present century, V. A. Smith published his celebrated work entitled *Early History of India*, in which an attempt to 'sort and arrange the accumulated stores of knowledge' in a somewhat connected account of the political and cultural history of ancient India was made for the first time. The book was revised and enlarged in subsequent editions published in 1908, 1914 and 1924, the last one appearing shortly after the author's death. The importance of the discovery and study of new inscriptions in the reconstruction of ancient Indian history and the progress made year after year becomes perfectly clear from a comparative study of the editions of Smith's work and H. C. Raychaudhuri's *Political History of Ancient India*, first published in 1923 and revised in 1927, 1931, 1938, 1950 and 1953. But, though much progress has been made, there are still innumerable gaps in the early period of Indian history, and numerous problems still await solution by further discoveries and studies.

The work of the reconstruction of the early period of Indian history was inaugurated by European scholars in the eighteenth century. Later on Indians also became interested in the subject. The credit for the decipherment of early Indian inscriptions, written in

[1] For a short account of the early phase of epigraphical studies, especially in south India, see J. F. Fleet, *Dynasties of the Kanarese Districts*, 2nd ed. (Bombay, 1882), pp. 11 ff.

[2] A. Cunningham, *Inscriptions of Asoka*, Corpus Inscriptionum Indicarum, I (Calcutta, 1877).

[3] J. F. Fleet, *Inscriptions of the Early Gupta Kings and their Successors*, Corpus Inscriptionum Indicarum, III (Calcutta, 1888).

[4] The first volume of *Epigraphia Indica* (completely published by 1892) was edited by J. Burgess with the assistance of E. Hultzsch, Epigraphist to the Government of Madras, and A. Führer, Archaeological Surveyor, North-Western Province and Oudh. The second volume was also edited by Burgess assisted by Führer. The next four volumes (1894-95 to 1900-01) were edited by Hultzsch as Epigraphist to the Government of Madras, and the seventh and eighth ones (1901-1907), together with a few parts of the ninth (1907-08), by the same scholar as Professor in the University of Halle. The later parts of the ninth volume were edited by Sten Konow as Government Epigraphist for India. Sten Konow's successor in office was Rao Bahadur V. Venkayya, followed several years after his death (1912) by Rao Bahadur H. Krishna Sastri. During the interval between Venkayya's death and Krishna Sastri's appointment, some volumes and parts of the journal were edited from abroad by Sten Konow and F. W. Thomas.

the Brāhmī and Kharoshṭhī alphabets, which paved the way of epigraphical and historical studies in India, is due to scholars like Prinsep, Lassen, Norris and Cunningham. A key to the decipherment of the alphabets was supplied by the coins of the Indo-Greek kings with bilingual and biscriptal legends and certain edicts of the Mauryan emperor Aśoka written both in Brāhmī and Kharoshṭhī. The words 'of king so-and-so' are found on the coins in question both in the Greek language and script and in the Kharoshṭhī alphabet (rarel y in Brāhmī) and the Prakrit language. Some letters and signs were also deciphered with the help of numerous dedicatory Brāhmī inscriptions in the same language, all of them ending with the expression *dānaṁ*, meaning 'a gift', preceded by the donor's name in the sixth case-ending (*sa*=*ssa*=*sya*). Indian epigraphic studies owe a great debt to many other European savants like G. Bühler, E. Senart, F. Kielhorn, E. Hultzsch, L. Rice, W. E. Elliot and J. F. Fleet, as well as to Indian scholars like Bhagwanlal Indraji, Rajendralala Mitra, R. G. Bhandarkar, R. D. Banerji, D. R. Bhandarkar, H. P. Sastri, V. Venkayya, H. Krishna Sastri and others.

The great part played by inscriptions, including legends on coins and seals, in the reconstruction of the history of ancient India can be demonstrated by an example. No imperial ruler named Budhagupta was known till the beginning of the nineteenth century. A stone inscription mentioning Suraśmichandra, a viceroy of king Budhagupta, was discovered at Eran in Sāgar District of Madhya Pradesh in 1838.[1] The record, bearing a date in the Gupta year 165, corresponding to A.D. 484-85, states that Mātṛivishṇu, ruler of Eran, was subordinate to Budhagupta's viceroy governing a province lying between the rivers Kālindī (Yamunā) and Narmadā. Thus we came to learn that a king named Budhagupta held sway over the Mālwā region in 484-85. Some silver coins of Budhagupta were discovered in 1894, and they were found to have been issued in the Gupta year 175, corresponding to A.D. 494-95.[2] It was thus further learnt that Budhagupta, king of Mālwā, reigned for about ten years between 484 and 495. In 1914-15 two inscriptions belonging to Budhagupta's reign were discovered at Sārnāth near Banaras[3] and were found to be dated in the Gupta year 157 (A.D. 476-77). Thus we came to learn that king Budhagupta was not a local ruler of the Mālwā region but that his dominions included considerably large portions of the U.P. It was also clear that he ruled not for about ten years but at least for about eighteen years between 476 and 495. The extension of Budhagupta's dominions from Mālwā in the west to Banaras in the east led to the suspicion that he might have belonged to the Imperial Gupta house of Magadha. This possibility was nearly proved in 1919-20, when two copper-plate inscriptions[4] of the same king were found at Dāmodarpur in Dinājpur District, north Bengal. These indicated the inclusion of the northern part of Bengal within the vast empire of Budhagupta. But even then we were in the dark about the exact position of Budhagupta in the genealogy of the Imperial Guptas of Magadha. In 1943, however, the study of the legend on a damaged clay seal[5] of Budhagupta, discovered at Nālandā (Patna District, Bihar), proved that he was the son of Pūrugupta, grandson of Kumāragupta I Mahendrāditya, great-grandson of Chandragupta II Vikramāditya and great-great-grandson of the mighty Samudragupta of the Imperial Gupta dynasty of Magadha. Thus, after the lapse of more than a century from 1838 to 1943, fairly complete information about the position of an ancient Indian monarch named Budhagupta was available to the students of early Indian

[1] Fleet, *op. cit.*, pp. 88 ff.

[2] J. Allan, *Catalogue of Coins of the Gupta Dynasties etc.* (London, 1914), pp. lxii and 153.

[3] *An. Rep. Arch. Surv. Ind.*, 1914-15 (1920), p. 125.

[4] *Epigraphia Indica*, XV (1919-20), pp. 134 ff.

[5] *Ind. Hist. Quart.*, XIX (1943), pp. 119 ff. and 272 ff.

history. Unfortunately, however, many facts associated with the reign of this ruler have still to be recovered. This gathering of information bit by bit is of absorbing interest to all investigators in the field of Indian historical research. The students of Indian history, who studied the Eran inscription in 1838, Budhagupta's coins in 1894, the Sārnāth inscriptions in 1914-15, the Dāmodarpur plates in 1919-20 and the Nālandā seal in 1943, must have felt 'like some watcher of the skies when a new planet swims into his ken'.

C. Development of writing

(i) *The Indus script*

The seals discovered at the ancient sites of Harappā in West Panjab and Mohenjo-daro in Sind (pl. CIII, 1 and 2), both of them now forming parts of West Pakistan, offer the oldest specimens of writing in India. At the dawn of human civilization man learnt how to express his ideas by drawing pictures. Writing with the help of an alphabet consisting of a limited number of signs with specific sound-values gradually developed out of this ancient custom in different parts of the world after hundreds of years. The legends on the seals of Harappā and Mohenjo-daro represent an intermediate stage between the pictographic and alphabetic forms of writing. It is a matter of regret that this oldest writing of India has not yet been deciphered. Its mystery is not likely to be finally solved before the discovery of biscriptal and bilingual epigraphs containing writings in this script together with their transliteration or translation in a known alphabet and language. The ancient writing on the seals of Mohenjo-daro and Harappā may have ultimately developed into the Brāhmī alphabet several centuries before the rise of the Mauryas in the latter half of the fourth century B.C.

(ii) *Brāhmī*

The Maurya emperors ruled over the major portion of the Indian sub-continent as well as over parts of Afghanistan. Maurya inscriptions, which have been found outside the Uttarāpatha division of ancient Bhāratavarsha, lying roughly between eastern Panjab and the Oxus river in Central Asia, are written in the Brāhmī alphabet. In modern times the letters of an alphabet are learnt from their fixed forms supplied by the printed text-books. In the olden days, however, the knowledge of alphabet was transmitted from teacher to pupil. The want of a definitely fixed model as well as the natural eagerness of man to write quickly led to the gradual modification in the forms of Brāhmī letters. This ultimately gave rise to the various regional alphabets of India. Brāhmī is the mother not only of all the Indian alphabets of today but also of the alphabets of other countries which came in early times under the influence of Indian civilization. The alphabets of Ceylon, Tibet, Burma, Siam (Thailand), Malaisia, Indonesia and French Indo-China are derivatives of the Indian Brāhmī script.

(iii) *Kharoshṭhī*

The edicts of the Maurya emperor Aśoka (269-232 B.C.), discovered in the present Peshawar and Hazārā Districts forming parts of ancient Uttarāpatha, are written in the Kharoshṭhī alphabet. Kharoshṭhī was an Indian modification of the old Aramaic script of western Asia, which was popularized in north-western Bhāratavarsha during the rule

of the Achaemenian emperors of Iran. Portions of Uttarāpatha formed a part of the Achaemenian empire for about two centuries before the rise of the Mauryas. Some inscriptions in the Aramaic script have also been discovered in that region.[1] Kharoshṭhī flourished for several centuries in Uttarāpatha and the neighbouring areas of Central Asia and afterwards died a natural death, as it was not quite suited for transcribing words of the Sanskrit language. Some interesting records in this script are the Prakrit (often greatly influenced by Sanskrit and the local dialects) documents on wooden tablets discovered in Central Asia Such epigraphs found at Niya have been assigned to thet hird century, while some records from Kucha belong to the seventh century. In India the latest Kharoshṭhī the documents, from Taxila, have been ascribed to the fifth century.

D. Sanskrit and Prakrit in early inscriptions

The language of the early epigraphs of India is Prakrit, superseded as the language of the royal courts by Sanskrit at a later date. The earliest Sanskrit inscriptions have been found in the western part of northern India; they belong to the early two centuries of the Christian era when that region was under the domination of foreigners like the Scythians and the Kushans. It appears that Sanskrit as the court language was originally patronized by the foreign rulers of Uttarāpatha. Prakrit was practically ousted by Sanskrit from north Indian epigraphs before the end of the third century A.D., but it took another century for the complete victory of Sanskrit over Prakrit in the courts of the kings of southern India. The latest Prakrit records of rulers who flourished in the southernmost areas of India are assignable to about the middle of the fourth century. Regional languages, employed in writing documents in that region during the early medieval period, appear in north Indian records several centuries later. A number of early inscriptions may be regarded as specimens of *kāvya* in prose or verse, composed by poets usually attached to the royal courts. The Jūnāgarh (Saurāshṭra) inscription of Rudradāman I[2] (middle of the second century A.D.), the Allahabad (U.P.) pillar inscription of Samudragupta[3] (middle of the fourth century A.D.), the Tāḷaguṇḍa (Shimoga District, Mysore) inscription of Śāntivarman[4] (middle of the fifth century), the Aihoḷe (Bījāpur District, Bombay State) inscription of Pulakeśin II[5] (first half of the seventh century A.D.) and many others belong to this class. A few early inscriptions in Prakrit may be similarly classed as *gadya-kāvyas*; cf. the Nāsik (Bombay State) cave-inscription[6] of the nineteenth regnal year of Pulumāyi and the Nāgārjunakoṇḍā (Guntur District, Andhra State) inscription of the fourteenth year of Vīrapurushadatta.[7]

E. Different kinds of epigraphs

Inscriptions may vary greatly in point of length. Sometimes an epigraph may contain only a mark or one single word or expression, indicating the name of an individual, often

[1] Cf. *Ep. Ind.*, XIX (1927-28), pp. 251 ff. Besides these and the inscriptions written in Arabic and Persian, there are certain records, mostly late, in other foreign languages and scripts. See, for example, *ibid.*, pp. 300 ff.; J. J. Cotton, *List of Inscriptions on Tombs or Monuments in Madras* (Madras, 1905); etc.

[2] *Ep. Ind.*, VIII (1905-06), pp. 76 ff.

[3] Fleet, *op. cit.*, pp. 1 ff.

[4] *Ep. Ind.*, VIII, pp. 24 ff.

[5] *Ibid.*, VI (1900-01), pp. 1 ff.

[6] *Ibid.*, VIII, p. 60.

[7] *Ibid.*, XX (1929-30), p. 16.

a pilgrim at a holy religious establishment engraving his name on a wall or stone to commemorate his visit or standing as the label of a sculptured scene from the epics or the Jātakas. Somewhat longer inscriptions may record the dedication of the images of deities (pl. CX, 1 and 2) or commemorate such events as the fall of a hero in battle (pl. CX, 3 and CXI, 2), or such curious social customs as the self-immolation of a widow (pl. CXII, 1) and head-offering (pl. CXI, 1). In some cases, however, an inscription may embody a *kāvya* in many cantos or a drama in several acts. The Udaipur (Rajasthan) Rājasamudra inscription[1] falls in the first category, while the Ajmer *Lalitavigraharāja* and *Harakeli-nāṭaka* inscriptions[2] are instances of the second type. The Kuḍumiyamalai (Pudukoṭṭai, Madras State) inscription[3] contains a unique seventh-century work on musical notations.

Epigraphic records may be broadly classified under two groups: (1) those engraved by or on behalf of the ruling authority and (2) those incised on behalf of private individuals or organizations. The largest number of epigraphs of the second category record donations made in favour of religious establishments or installation of images for worship. They are usually incised on the objects that were donated or installed, and are, as a rule, small. In some cases, however, they mention the king during whose reign the grant was made or the installation took place. Innumerable dedicatory inscriptions, big and small, are engraved on the walls, etc., of reputed religious establishments and centres of pilgrimage, such as the temples at Bhuvaneśwar, Drākshārāma, Śrīkūrmam, Simhāchalam, Śrīrangam, Kānchīpuram, Lalguḍi (pl. CVIII) and other places.[4] The majority of the donations recorded in these epigraphs were made by pilgrims, some of whom were kings, chiefs or royal officers. In some cases, people are known to have made donations in favour of such temples *in absentia*. Pilgrims visiting the temples in the course of pilgrimage often carried with them a written eulogy with a view to getting it engraved on a temple wall after having made the desired donations. Eulogistic compositions, called *praśastis*, were sometimes composed and engraved on stone tablets or pillars to commemorate public works like the excavation of a tank or step-well or the construction of a temple by a royal or ordinary personage or a group of individuals. The ruler of the country is usually mentioned in such works composed on behalf of private persons or officials. Even private records, therefore, often offer valuable information for the reconstruction of political and cultural history as well as for other allied subjects such as topography. The Uttiramerur (Chingleput District, Madras) inscriptions[5] throw very welcome light on the village administration in southern India during the tenth century.

By far the most important are, however, the records incised by or on behalf of the ruling authority. These inscriptions may be classified under such heads as: (1) royal edicts (e.g. the rock and pillar edicts of the Maurya emperor Aśoka), (2) epigraphs commemorating particular achievements of a king in a eulogistic *kāvya* or *praśasti* (cf. the Jūnāgarh, Allahabad and Aihoḷe inscriptions referred to above), (3) grants in favour of learned Brahmans, religious institutions or deserving individuals and officials, and (4) miscellaneous.

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[1] *Ep. Ind.*, XXIX (1951), Appendix, pp. 1 ff.

[2] *Indian Antiquary*, XX (1891), pp. 201 ff.

[3] *Ep. Ind.*, XII (1913-14), pp. 226 ff.

[4] *South Indian Inscriptions*, IV (1924), nos. 99 ff., etc., and 1006 ff.; V (1926), nos. 1150 ff.; VI (1928), nos. 678 ff. and 692 ff., etc.

[5] *An. Rep. Arch. Surv. Ind.*, 1904-05 (1908), pp. 131 ff.

F. Copper-plate grants (pls. CVI and CVII)

Epigraphs recording grants of land were usually engraved on copper plates. Early works on law, such as the *Yājñavalkya-smṛiti*, I. xiii. 318 ff., and *Vishṇu-smṛiti*, III. 83, speak of the preparation of *rāja-śāsanas*, i.e. royal charters recording grants of land, property, etc. The work of Yājñavalkya is believed to have been composed about the fourth century A.D., while that of Vishṇu probably belongs to a slightly later date. When a grant of land, etc., was made by the king, a *lekhya* or document was made for the guidance of future rulers of the country with reference to the privileges the donee was allowed to enjoy. The record was then written on a piece of cloth (*paṭa*) or incised on copper plates or a copper tablet (*paṭṭa*) with a view to making it a permanent charter. A description of the king making the grant and his three immediate predecessors as well as that of the donee formed a part of the document, which also included details regarding the boundaries and measurement, etc., of the gift land and a request by the donor to the effect that future rulers should not resume it.[1] A *lekhya* was endowed with the king's seal and signature and the date of issue. The draft of the charter was to be written by a high official of the king such as the minister for war and peace. The *Vyāsa-smṛiti*,[2] of about the sixth century, says that the draft of a charter was first to be written on a slab or the floor with a piece of chalk and later rewritten on the proper object after correction. This description agrees with some of the actual specimens of copper-plate grants. The earliest of such charters so far discovered may be assigned to a date of about the end of the third century. It is the Mayidavolu (Guntur District, Andhra) plates[3] issued by the Pallava crown-prince Śivaskandavarman of Kāñchīpura. But the texts of some earlier charters issued by rulers of the Śaka and Sātavahana families of the second century A.D. are found engraved on the walls of certain west Indian caves such as those at Nāsik.[4]

Copper plates of small size were originally employed in writing royal documents recording grants of land. Naturally they were slightly bigger in size when only one plate was used in writing a charter than when several of them were employed. Such records often mentioned the donor alone, but sometimes the name of his father was added. In many cases, however, the donor is found to be introduced as the son, grandson and great-grandson of particular rulers. But such details are not generally found in single-plate records of smaller size. An elaborate description of the achievements of the donor and his ancestors does not usually find place in the earlier copper-plate inscriptions.

Some kings of the Kāthiāwāṛ region issued charters incised on the inner sides of two plates, the outer sides being kept blank. The majority of the multi-plate documents of the early period were, however, written on three plates. The records of the Somavaṁśī kings of Orissa speak of such charters as *triphalī-tāmraśāsana*[5], i.e. a deed written on three

[1] J. Jolly, *Hindu Law and Customs*, tr. B. K. Ghosh (Calcutta, 1928), pp. 248-49. Such records were very valuable to the donee, as their loss made the rent-free gift lands in his possession revenue-paying unless fresh grants could be secured from the ruler in respect of the land in question. The copper plates were, therefore preserved carefully, sometimes in stone coffers or earthen jars hidden underground (cf. pl. CVI). There are instances when a donee or his descendant is known to have carried the document with him even when he started for a distant place on pilgrimage. Cf. *Ep. Ind.*, II (1894), pp. 250 ff.; XXVIII, pp. 175 f. For some fully or partially rent-paying grants, see *Jour. Roy. Asiatic Soc.*, 1952, pp. 4 ff.

[2] See quotation in the *Vyavahāra-tattva* and in the *Śabda-kalpadruma*, *s.v. phalaka*.

[3] *Ep. Ind.*, VI, pp. 86 ff. For somewhat earlier records see the Taxila and Kalawān plates and Taxila silver scroll, *Ep. Ind.*, IV (1896-97), pp. 55 f; XXI (1931-32), p. 259; XIV (1917-18), p. 295.

[4] *Proc. Ind. Hist. Congress*, Lahore (1940), pp. 52 ff.

[5] Cf. *Ep. Ind.*, III (1894-95), pp. 346 f.

plates or tablets of copper. The outer sides of the first and third plates of these records are usually uninscribed. This practice was no doubt meant for the preservation of the writing. Sometimes the borders of the inscribed sides of the plates were slightly raised so that the writing might not be rubbed out. One of the biggest of such three-plate records is the Paiṭhan epigraph[1] (A.D. 1272) of the Yādava king Rāmachandra. The plates are each 20½ by 15 in. and together weigh 2,300 *tolas*. They are strung on two rings weighing 457 *tolas*, one of which bears the royal seal with the emblem of Garuḍa. The total weight of the charter is thus 2,757 *tolas* (70⅞ lbs.). There are altogether one hundred and eighteen lines of writing on the plates.

A tendency to introduce an elaborate eulogy of the donor and his ancestors in the copper-plate grants gradually developed. This is specially noticed in the charters issued by imperial rulers. As a result of this, even those dynasties which engraved their charters on single plates (e.g. the Pālas and Senas of eastern India) had to use plates of a bigger size. Thus, the Monghyr plate of Devapāla[2] measures 18¾ by 13⅞ in. and the Naihāṭi plate of Ballālasena[3] 15 by 13⅝ in. Such epigraphs often contain about seventy lines of writing. The weight of a single plate (19 by 13 in.), without any seal, bearing an inscription (in twentyfour lines) of the Gāhaḍavāla Govindachandra (*circa* 1114-55) on only one of its faces, and now preserved in the Bharat Kala Bhawan, Banaras, is 372½ *tolas*.

Among the early dynasties that used more than one copper plates for their documents, we may mention the Pallavas of south India, the Vākāṭakas of Berar, the Maitrakas of Valabhī and the Bhaumas of Prāgjyotisha. The Nidhanpur inscription of the Bhauma king Bhāskaravarman[4] (seventh century) was originally written at least in about one hundred and seventy lines on as many as six or seven plates. The records of the Eastern Gaṅga emperors of medieval Orissa were usually incised on six or seven plates, which, together with the seal-ring, often weighed more than one thousand *tolas*. One of the Purī copper-plate inscriptions of the Gaṅga Narasiṁha IV,[5] who ascended the throne about 1378, contains no less than two hundred and seventyeight lines of writing. But the biggest copper-plate inscriptions so far discovered belong to the Choḷa dynasty of the Tanjore-Tiruchirāpalli area of south India. The larger Leiden inscription of Rājarāja I[6] (985-1016) has four hundred and fortythree lines of writing engraved on twentyone plates. The Tiruvalangāḍu inscriptions dated in the sixth regnal year of Rājarāja's son Rājendra I[7] (1016-43), is written on thirtyone plates which, together with the massive seal-ring, weigh 7,980 *tolas* (199½ lbs.) and bear eight hundred and sixteen lines of writing. But the biggest copper-plate charter so far discovered is the Karandai inscription of the eighth regnal year of the same Choḷa monarch.[8] It is engraved on no less than fiftyfive plates which measure 16½ by 9½ in. each and together weigh, even without the seal-ring, 8,645 *tolas* (216¼ lbs.). The weight of one of the two seal-rings found with the plates is 753 *tolas*. The inscription contains upwards of two thousand and five hundred lines of writing. The first three plates, containing one hundred and thirtyone lines, give the genealogy of the Choḷas up to

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[1] *Indian Antiquary*, XIV (1885), pp. 314 ff.
[2] *Ep. Ind.*, XVIII (1925-26), pp. 304 ff.
[3] *Ibid.*, XIV (1917-18), pp. 159 ff.
[4] P. N. Bhattacharya, *Kāmarūpa-śāsanāvalī* (Rangpur, 1931), pp. 1 ff.
[5] *Jour. Asiatic Soc. Bengal*, LXIV (1895), pp. 136 ff.
[6] *Ep. Ind.*, XXII (1933-34), pp. 213 ff.
[7] *South Indian Inscriptions*, III, pt. 4 (1920), pp. 383 ff.
[8] *Jour. Oriental Res.*, XIX (1950), p. 148.

Rājendra I and record the gift of a village in favour of certain Brahmans. The next twentytwo plates (in one thousand and fortyone lines) contain a eulogy of the king as well as a description of the boundaries of the gift village and the names of the officials and other persons associated with the grant. The last thirty plates (one thousand three hundred and sixtyseven lines) quote the names of the donees together with the names of their *gotras*, places of residence, etc. The number of donees thus enumerated is no less than one thousand and seventythree. We know that, while describing the boundless liberality of a king, a poet sometimes spoke of the dearth of copper that resulted from the issue of innumerable copper-plate grants by the former.[1] Considering the great bulk of the copper charters of the Chola monarchs, we have to admit that the statement, hyperbolic though it is, may not, at least in some cases, be entirely without foundation.

G. Engraving of inscriptions

Often illiterate or semi-literate stone-cutters or goldsmiths were entrusted with the task of engraving records on stone or copper plates, and this fact accounts for the numerous errors noticed in a large number of epigraphs, especially those engraved on behalf of private individuals.[2] We have many instances of badly engraved records even among royal charters, especially those issued by minor ruling families. The Banaras plate of the Kalachuri Karṇa[3] (*circa* 1040-71) offers an instance of an imperial charter written and engraved by irresponsible and incompetent persons. But the grant was made when the king was stationed at Prayāga (Allahabad) in the course of a tour of pilgrimage, and it is possible that the work of engraving the charter was entrusted to a novice who could not read the writing of the draft properly. Usually, however, powerful kings had in their service trained and competent engravers who performed their work creditably. A high officer or a learned man of the court was sometimes engaged for writing a record on stone or copper plates with ink or a pointed instrument.[4] This was meant to facilitate the work of the engraver and also to ensure the correctness of the inscription. The Deopārā stone inscription[5] of king Vijayasena of Bengal is known to have been engraved by a renowned artist named Śūlapāṇi, who was the president of a guild of the artisans of Varendra (north Bengal) and enjoyed the feudatory title of *Rāṇaka*. The neat and beautiful incision of the inscription excites our admiration. The Tāḷagunda inscription, which is a *praśasti* composed by Kubja, court poet of the Kadamba Śāntivarman of the Karṇāṭa country, was written on the stone slab by the poet himself so that the engraver succeeded in performing his work neatly without committing mistakes.

H. Eulogies in inscriptions

The grant of a village or even a small piece of land is often found to have been made the subject of an elaborate eulogy or *praśasti*. But compositions meant for the commemoration of victories in war or the construction of a temple or excavation of a tank were usually

[1] Ballāla's *Bhojaprabandha* (Nirnaya-sagara Press, 1932), p. 34, verse 162.

[2] According to the *Mitākshara* on the *Yājñavalkya-smriti*, II. 89, a royal deed had to be written in correct and elegant language, although documents of ordinary people, which were not required to be written in correct Sanskrit, could be written in local dialects.

[3] *Ep. Ind.*, II, pp. 305 ff.

[4] *An. Rep. Arch. Surv. Ind.*, 1910-11 (1914), p. 74.

[5] *Ep. Ind.*, I (1892), pp. 307 ff.

engraved on tablets or pillars of stone. Generally such records are big, although private pillar inscriptions recording the death of a hero or the self-immolation of a *satī*, which are numerous in the southern and western parts of India, are often small. Detailed information about the achievements of a king and his ancestors, found in the elaborate *praśastis*, is of inestimable value for the reconstruction of ancient and medieval Indian history, especially because most of the facts supplied by them are in many cases not known from any other source. Often the history of a royal family has been reconstructed almost entirely on the basis of inscriptions including legends on coins and seals. A case in point is that of the mighty Guptas of Magadha. The achievements of the great Samudragupta (*circa* 340-76), who ruled from Pāṭaliputra near Patna but subdued wide areas of north India and penetrated as far as Kāñchīpura (Chingleput District, Madras State) in the south, are only known from his Allahabad pillar inscription. Similarly, the exploits of the army of the Choḷa monarch Rājendra I of the Tamil land, which advanced in a victorious march as far as Bengal in the east, and of his navy that established Choḷa authority in Malaisia and Indonesia are known from inscriptions alone.[1]

But the *praśastis* of the medieval rulers of India often contain an amount of exaggeration which partially mars their value as a source of history. The court poets' tendency to exaggerate is well illustrated by an inscription[2] of the Chandella king Dhaṅga (*circa* 950-1002) at Khajurāho (Chhatarpur District, Vindhya Pradesh), a stanza whereof implies that the monarch crushed many kings including the rulers of Kāñchī, Andhra, Rāḍhā (south-west Bengal) and Aṅga (east Bihar) and had the queens of all the defeated monarchs imprisoned in his capital. There is little doubt that the claim is an exaggeration. First, it is doubtful if Dhaṅga at all came into collision with all the four kings mentioned in the record, even if the rulers of Aṅga and Rāḍhā are taken to have been merely viceroys of the contemporary Pāla emperor of Bengal and Bihar. Secondly, even if Dhaṅga actually fought with the four kings, it is more doubtful that he succeeded in defeating all of them. Thirdly, supposing that he came off victorious in all the four cases, it is really difficult to believe that he succeeded also in carrying off the queens of all his adversaries. Fourthly, even granting that Dhaṅga actually captured the wives of his adversaries, he is normally expected to have placed the ladies in his harem or in charge of his favourite subordinates rather than in prison. Historians have, therefore, to be careful in determining the truth of a claim put forth in the *praśastis* of medieval Indian kings.

Such gross exaggerations are, however, scarcely noticeable in the description of kings found in records of the earlier periods. For this reason, in spite of the fact that there is always an amount of exaggeration in the royal *praśastis* composed by the court poets of Indian monarchs, the earlier the king is the greater is our reliance on his claims. The compositions of the *praśastikāra* usually abound in indefinite praises of his patron and the latter's ancestors. Vague claims are generally less reliable than definite statements, such as the mention of the personal names of adversaries. Whatever be the nature of the exaggeration, there is undoubtedly a very considerable amount of truth in the claims put forward in records like the Allahabad pillar inscription of the Gupta emperor Samudragupta and the Tirumalai rock inscription of the Choḷa monarch Rājendra I.

The descriptions of kings in the *praśastis* often contain claims that are conventional and therefore of little historical value. One of these conventions is the representation of an imperial ruler as the conqueror or ruler of the entire earth or the *chakravarti-kshetra*

[1] *Ep. Ind.*, IX (1907-08), p. 233.
[2] *Ibid.*, I, p. 145.

(i.e. the sphere of influence of a paramount ruler). This 'earth' was conceived as identical with ancient Bhāratavarsha; but sometimes it was regarded as co-terminous either with Āryāvarta or with Dakshiṇāpatha.[1] In a number of cases a mere present from the ruler of a distant land is pompously represented as tribute, and a contact of any kind with a king is put up as his subordination to the poet's patron or his ancestors.

I. Seals

To assure the authenticity of copper-plate grants issued by kings, royal seals were attached to them. These seals are of various kinds. In some cases they are small and only contain the representation of the emblem that was the crest of the family to which the issuer of the grant belonged. Often, however, the name of the king is found in addition to the emblem. Such emblems were generally associated with the religious persuasion of particular royal families. As Śaivism was the dominant religion in different parts of the country in all the ages of history, the representation of the bull (Śiva's *vāhana* called Nandin) is very often noticed on the seals of royal as well as private personages. A number of seals also bear emblems without any religious association. In many cases, the royal seals are large in size. The legends on such seals often mention the names of the kings and those of his ancestors reigning before him. Of some of the large seals the upper half is generally covered by the emblem or emblems and the lower half by the legend. Large numbers of seals (of clay and other materials) of kings, royal officials and private individuals as well as of administrative, mercantile and religious organizations have been discovered in different parts of India.[2] The writing on the seals is usually positive, although we have some sealings with legends in negative writing as well, the latter being apparently used in sealing documents. Some royal families preferred the engraving of their charters on single plates of copper, while others incised their records on a number of plates (above, p. 219). In the former case, the seal was soldered to the top or left end of the plate. But when a grant was engraved on several plates they were strung together on a ring which passed through a hole in the left end of each plate, and the seal was affixed to the ring. The seal, usually moulded in bronze, was placed on the joint of the copper ring, and its inner part was fixed with the ring with the help of a lump of molten metal completely covering that particular part of the ring. As to the single plates, the seals were so made as to have one knob or a few of them on their back side. The plates had a projection with one or more holes, and the knob or knobs on the back of the seals had to pass through them. The back of the seals was then affixed to the projected part of the plates with a lump of molten metal which totally covered the projection. In some cases, such single plates had no projection, and the holes, meant for the knobs of the seal to pass through, were made on the border of the plate itself. In some multi-plate charters (e.g. the records of the Maitrakas of Valabhī)[3], the plates were strung on two rings, but the seal was soldered to only one of them.

J. Dating of records

Many of the early inscriptions of northern India are dated according to eras. Some of the eras used are (1) the old Śaka-Pahlava era of 58 B.C., later known as the Kṛita,

[1] *Jour. Roy. Asiatic Soc. Bengal*, Letters, V (1939), pp. 407 ff.

[2] Cf. *Nālandā and its Epigraphic Material*, Mem. Arch. Surv. Ind., no. 66 (1942); *An. Rep. Arch. Surv. Ind.*, 1903-04 (1906), pp. 101 ff.; 1911-12 (1915), pp. 47 ff.; 1913-14 (1917), pp. 124 ff.; etc.

[3] Fleet, *op. cit.*, pp. 164 etc.

Mālava or Vikrama era, (2) the era of A.D. 78, counted from the first year of the reign of the Kushan king Kanishka I and later known as the Śaka era, (3) the era of A.D. 248, used originally by the Ābhīras, Traikūṭakas and Kalachuris, (4) the Gupta or Valabhī era of A.D. 320 and (5) the Harsha era of A.D. 606. The dated records have been of great help in solving many problems of chronology in ancient Indian history. The earliest dated Indian records do not, however, bear dates in any era but merely refer to the regnal years of particular monarchs. This was due to the absence of any popular era in ancient India. Kings of many parts of India continued to date their charters in their regnal reckoning even long after the introduction of the use of an era in the country. The custom of employing the years of an era in dating royal charters and private records was popularized in India by foreigners such as the Scytho-Parthians and the Kushans, to whom we owe the Vikrama and Śaka eras.[1]

The Śaka-Pahlava era of 58 B.C. originated in Drangiana (east Iran), and its use was carried to the valley of the Indus and Panjab by the Śakas. It was then carried to the Rājpūtānā and Mālwā regions by the Mālavas who originally lived in Panjab. From Rājpūtānā it was carried to the U.P. by the Maukharis. The popularity of this era in north India gradually increased owing to its adoption by such imperial ruling families of that region as the Gurjara-Pratīhāras. About the eighth century A.D. it came to be associated with king Vikramāditya of Indian tradition which developed on the basis of the achievements of the Gupta Vikramādityas, specially of Chandragupta II (376-414), the extirpator of the Śakas of western India. The use of the Śaka era, which started from the accession of the Kushan emperor Kanishka I in A.D. 78, was continued by these Śakas, who were originally feudatories of the Kushans, till the end of their rule in about the beginning of the fifth century. Owing to the continued use of the era by the Śakas, it came to be known in western India and its neighbourhood as the era of the Śaka kings.[2] Its great popularity in southern India was due to its adoption by the Chāḷukya emperors of Badāmī in the first half of the sixth century. Another factor that contributed considerably to the spread of both the Vikrama and Śaka eras was their acceptance by the astronomers of the Ujjayinī school and by the Jainas who were greatly responsible for the development of the Śaka-Sālivāhana and Vikramāditya sagas. The popularity of the Śaka era in the Kannaḍa-speaking area of the Deccan appears to have been the result of the influence of the Jaina astronomers and statesmen in the courts of the rulers of Karnāṭaka.[3]

K. Epigraphs in Greater India

It may be mentioned in this connexion that stone inscriptions in the Sanskrit language, written in the derivatives of the Brāhmī script and often bearing dates in the Śaka era, have been discovered in large numbers in Indonesia, Malaisia and Indo-China. These epigraphs have been of great help to scholars in reconstructing the early history of those lands, which was, like that of India, wrapped in obscurity. Moreover, they tell us the brilliant story of the spread of Indian culture in those parts of the world from both northern and southern India, although south Indian characteristics are more prominent

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[1] *Vikrama Volume*, ed. R. K. Mookerji (Ujjain, 1948), pp. 557 ff.

[2] *Ep. Ind.*, VI (1900-01), p. 7, verse 34 of the text.

[3] *The Age of Imperial Unity*, ed. R. C. Majumdar and A. D. Pusalker (Bombay, 1951), pp. 125 n. and 144 n.; *Ind. Hist. Quart.*, XXIX (1953), pp. 296-97.

in the records of south-east Asia.[1] Mention has already been made above (p. 216) of the Kharoshṭhī records in the Prakrit language which were discovered in Central Asia.

3. ARABIC AND PERSIAN INSCRIPTIONS

By Z. A. Desai

A. Study and publication

It is not necessary to describe in detail the work done in the cause of this branch of Indian epigraphy prior to the re-organization of the Archaeological Survey; it can be assessed from the 'List of the published Mohamedan inscriptions of India' compiled by J. Horovitz.[2] The works quoted therein comprise mainly periodical reports or lists published under the authority of or by the Archaeological Survey after its inception in 1862. There are some literary works also, mainly topographical and biographical, which deal in some way or the other with Arabic and Persian epigraphs, e.g. the *Sairu'l Manāzil* (published in about 1835) by Sangin Beg and *Āthāru's Ṣanādīd* (1846) by Sayyid Ahmad Khan, both dealing with the monuments of Delhi—the latter containing, in addition, drawings of certain prominent monuments and facsimiles of their inscriptions; *Gaur: its Ruins and Inscriptions* (London, 1878) by J. H. Ravenshaw; *Lahore: its History, Architectural Ruins and Antiquities* (Lahore, 1892) and *Agra: Historical and Descriptive* (Calcutta, 1896), both by Sayyid Muhammad Latif; *Aḥsanu's Siyar* (Agra, A.H. 1320) by Muhammad Akbar Jahan; *Kanzu't Tawārīkh* (Badaun, A.H. 1319) by M. Raziud Din Bismil; and *Taḥqīqāt-i-Chishtī* (Lahore, A.H. 1324) by M. Nur Ahmad Chishti. Among the periodicals, the *Asiatic Researches, Journal Asiatique, Journal of the Asiatic Society of Bengal* and *Indian Antiquary* deserve mention. To H. Blochmann should go the credit of deciphering and publishing a large number of Arabic and Persian inscriptions that were forwarded to him, through the Asiatic Society of Bengal, by officials from various parts of India including those of the Survey. In a way, therefore, the *Journal of the Asiatic Society of Bengal* may be regarded as a precursor of the epigraphical series started later on by the Survey. To the list given above may be added the *Corpus Inscriptionum Bhavnagari*, a collection of some fiftyone inscriptions from Kāthiāwāḍ (Saurāshṭra) and Gujarat, published in 1889 by the former State of Bhavnagar.

However, the handling of the texts in most of the above works is not, and could not be, very careful owing to obvious reasons. The steady and systematic conduction of activities of the Survey after re-organization facilitated the collection of inscriptions. The *Epigraphia Indica*, meant primarily to deal with epigraphical material pertaining to ancient Indian history in general, had published in its second volume only a few Arabic and Persian inscriptions. Greater attention was regarded as necessary for this section of Indian epigraphy after the re-organization; its field began to be widened and consequent upon a large number of Arabic and Persian epigraphs becoming available for study, it was decided to start a biennial supplement to the *Epigraphia Indica* to deal with them. Accordingly, a supplement for 1907-08 was first published under the editorship of

[1] R. C. Majumdar, *Champā* (Lahore, 1927); *Suvarṇadvīpa*, pts. i-ii (Dacca, 1937-38); *Kambuja-deśa* (Madras, 1944); etc.

[2] *Epigraphia Indo-Moslemica (E.I.M.)*, 1909-10, pp. 30-144.

E. Denison Ross. The next issue, for 1909-10, however, assumed independence under the title *Epigraphia Indo-Moslemica* and was edited by J. Horovitz, Professor of Arabic in the Muhammadan Anglo-Oriental College, Aligarh, and Government Epigraphist for Muslim Inscriptions. In that issue, he also published the 'List of published Mohamedan inscriptions of India', arranged geographically and aiming 'at bibliographical completeness with regard to inscriptions of which either the text or at least a full translation has been published, omitting all those whose contents have been described only in a general way'.[1] The list was prefaced by a short but scholarly survey of the inscriptions contained therein, with particular reference to their importance and linguistic and palaeographic characteristics. It was also Horovitz's idea to collect and publish records belonging to one ruler or dynasty at one place, as is apparent from his article 'The inscriptions of Muḥammad Ibn Sām, Quṭbud din Aibeg and Īltutmish', published in the issue for 1911-12. The scheme was pursued by his successor, Ghulam Yazdani, who, as the Government Epigraphist for Muslim inscriptions, edited the next issue. He published two articles, 'The inscriptions of the Turk Sulṭāns of Delhi' and 'The inscriptions of the Khaljī Sulṭāns of Delhi and their contemporaries in Bengal'.[2] However, the scheme proved too ambitious and could not be fully executed, for the material so essential for a project of this nature was not easily available. Still, whenever such material was forthcoming, articles were published on the lines envisaged by this scheme.

Yazdani successfully ran the series for about a quarter century, bringing out in all fourteen issues and one supplement, the last issue being for 1939-40. The fifteenth issue was published as the one for 1949-50 due to the conditions created by the War. To the scholarly zeal and indefatigable industry of this eminent epigraphist this series owes its growth and expansion. It is also to his credit that the publication of the series was never in great arrears, all the more so when we bear in mind that more than half the number of articles were contributed by himself and that he had to carry out this heavy task in his honorary capacity as Muslim Epigraphist to the Government of India, in addition to his duties as Director of Archaeology in Hyderabad State.

The publication of the series was resumed after the termination of war. A full-time post of Assistant Superintendent for Epigraphy for Arabic and Persian inscriptions was created in 1946. The issue for 1949-50, referred to above, was brought out a couple of years later under the editorship of Muhammad Ashraf Husain. It has now been decided that the series should be renamed and the issues for 1951 and 1952 and onwards be designated as *Epigraphia Indica—Arabic and Persian Supplement.*

The number of scholars who have contributed to the series is not large, being only twentyseven. The larger contributions, apart from Yazdani, are by Zafar Hasan, M. Nazim, Shamsud Din Ahmad, Ramsingh Saksena and Khwaja Muhammad Ahmad. It has been observed that of the inscriptions published in the series, Hyderabad State and Bombay Province claim the largest share, the other States being meagrely represented, though a fairly large number of inscriptions is available elsewhere.[3] This fact, however, should not be construed to mean that 'regional outlook in the publication of inscriptions'[4] has been maintained. At the same time, we should not try to justify this on the ground that a large number of inscriptions from northern India have been published by other

[1] *E.I.M.*, 1909-10, p. 30.

[2] *Ibid.*, 1913-14, pp. 13 ff.; 1917-18, pp. 8 ff.

[3] J. Cumming, *Revealing India's Past* (London, 1939), p. 220; V. S. Bendrey, *A Study of Muslim Inscriptions* (Bombay, 1944), p. 22.

[4] Bendrey, *op. cit.*, p. 22.

agencies. The simple reason for the preponderance of inscriptions from these two States is that greater facilities and opportunities were available for their study to their editors who, stationed in these parts, could easily collect and discover new inscriptions.

Apart from this regular series, the Archaeological Survey has, from time to time, published inscriptions in its series of Memoirs. Thus, for example, a monograph on the inscriptions of Bījāpur, edited by M. Nazim, was published as Memoir no. 49 in 1936, and another, containing a record of all the Qurānic and non-historical epigraphs on the protected monuments in Delhi Province by M. Ashraf Husain, as Memoir no. 47 in the same year.

It is but natural that agencies other than the Survey cannot fully undertake, even if they wish to do, the task of collecting and editing inscriptions, as it requires money and time. It is no wonder, therefore, if we do not find much work done outside the Survey. However, individual scholars have in recent times engaged their attention, if on a small scale, in bringing to light some inscriptions. Thus, fiftynine inscriptions, mostly from Ahmedabad, of which as many as fortysix are accompanied by facsimiles, were edited and published by M. A. Chaghtai in the *Bulletin of the Deccan College Research Institute*, III, no. 2 (Poona, 1942). They have also been printed in a separate monograph under the title of *History of Muslim Monuments of Ahmedabad through their Inscriptions* (Poona, 1942). It is true that a few of the inscriptions studied therein had been published elsewhere; nevertheless, the book has a value of its own inasmuch as it presents at one place important historical epigraphs of the region. Also, a few inscriptions studied by different scholars have recently appeared in various learned journals, like the *Journal of the Asiatic Society of Bengal*, *Indian Historical Quarterly* (Calcutta) and *Oriental College Magazine* (Lahore), but their number is not great. Mention may also be made of *A Study of Muslim Inscriptions* (Bombay, 1944), with special reference to the inscriptions published in the *Epigraphia Indo-Moslemica* from 1907 to 1938, by V. S. Bendrey of Poona; it supplies the 'long-felt want for a reliable, comprehensive and well-equipped Guide, prepared on scientific lines and leading through labyrinthine shafts to the veritable mine of epigraphical material treasured in the volumes of the Journal' (*Epigraphia Indo-Moslemica*). It also contains summaries of inscriptions chronologically arranged and four appendices. The introductory portion of the study not only explains the principles on which a practical, precise and scientific approach to a methodical study of epigraphical material should be based but also contains very valuable suggestions for future workers in this branch of research.

B. The nature of the records

Arabic and Persian inscriptions are available in India from the last decade of the twelfth century A.D.; those that bear an earlier date are either from outside or are later than the date they contain. The findspots of the earliest epigraphs, only a few in number, are the Quṭb premises at Delhi, Arhāi Din kā Jhonpṛa at Ajmer and the tomb of Shāh Ni'matu'llāh Shahīd at Hansi. The number goes on increasing in the subsequent centuries, but it is the largest in the sixteenth and seventeenth centuries, which saw the zenith of Muslim rule in India. After this, a decrease set in. Of the various parts of the country, Panjab, Uttar Pradesh, Bengal, Bombay and Hyderabad are comparatively rich in inscriptions, while Madras is the poorest. Among the individual towns and cities where they are found in quite a number are Bījāpur, Delhi, Ahmedabad, Fatehpur Sīkrī and Agra, Ajmer, Gulbarga, Hansi, Gauṛ, Bihar, Pāṇḍua, Māldā, etc.

The majority of these inscriptions is to be found on mosques, tombs and similar religious buildings. They give, as a rule, the date of their construction or repairs, etc.,

along with the names of the reigning monarch and the builder. In some cases, inscriptions are found on monuments other than what they originally belonged to, having been brought from outside in order to be saved from destruction or out of fear lest the religious verses inscribed therein might be subjected to disrespect. Thus, we occasionally come across epitaphs appearing on mosques and mosque-inscriptions fixed up on graves. Among inscriptions on non-religious buildings, frequent are those recording the erection of or repairs carried out to forts, bastions, fort-walls, gateways, roads, granaries, etc. Next in number come those which may be termed as administrative, containing purport of orders or mandates proclaiming the abolition of certain taxes, prohibiting some unlawful or undesirable practices or making adjustments of public grievances. Some of them are deeds of endowments made in favour of the mosques or such other religious places for their proper maintenance, etc. There are also a few which appear on stones indicating boundaries or on slabs fixed up commemorating the visit to or halt at the respective places by eminent personages, especially the emperor. Among the latter, those of Akbar's time deserve special mention. Most of them, carved by Mīr Muḥammad Ma'ṣūm Nāmī of Bakkar, an author and a nobleman, commemorate Akbar's expedition to and victory over Khāndesh and the Deccan and his halts in the course of his journey to and back from these places. Another group of buildings of public utility on which quite a number of inscriptions appear comprises tanks, wells, *madrasas*, palaces, gardens, bridges, caravan-sarais, etc.

Apart from stone slabs there are numerous movable objects bearing inscriptions. They include arms, seals, signets, vases, vessels, precious stones, etc. Out of these, a few inscriptions on guns and swords have been published; the rest being mostly in private custody, the inscriptions on them are not easily accessible for reference. Copper plates were not common in the Muslim period, though a few belonging to the later period are available.

C. Language

As regards their language, the majority is written in Persian, many are in Arabic, some partly in Arabic and partly in Persian. Some are bilingual records, written in Arabic or Persian and one of the Indian languages—Sanskrit or a regional language like Marathi, Kannada or Telugu. Inscriptions have been found, though very few, where the record is trilingual. The earliest inscriptions of India are all in Arabic except one, which is reckoned as the earliest of the Arabic and Persian records, to wit, the inscription on the Quwwatu'l Islām mosque, Delhi, dated A.H. 587. Attention is, however, called to the remarks of Horovitz, who edited this inscription, that it seems to have been set up a few years later than its date.[1] Arabic continued to be the language of inscriptions till the last decades of the thirteenth century. After the accession of the Khaljīs Persian is found regularly adopted for epigraphical records; thus, from the early years of the fourteenth century we find Persian freely used in epigraphs. The subsequent period saw a greater popularity of Persian, though Arabic is not found totally replaced; for, apart from religious inscriptions that continued to be written in Arabic, there were places like Bengal where Persian does not seem to have found favour against Arabic. From the sixteenth century onwards, synchronizing with the establishment of the Mughul rule in India, Persian acquired full recognition in state-records as well as in epigraphy and almost completely replaced Arabic in the first half of the eighteenth century. Urdu made its

[1] *E.I.M.*, 1911-12, pp. 13-14.

appearance only once in the middle of the eighteenth century.[1] We may, however, mention a chronogram of the erection of a mosque in what is termed as old Urdu, appearing in an inscription from Ahmedabad dated A.H. 963.[2] In quite recent times Urdu is found replacing Persian.

The Arabic epigraphs are all in prose with only very few exceptions. Of these latter, one dated A.H. 713 from Ẓafar Khān's mosque at Tribeni, District Hooghly in Bengal, is remarkable inasmuch as it is the earliest of its kind in India; it also provides the earliest chronogram in Arabic and Persian inscriptions.[3] The older Persian inscriptions are often composed in prose—the earliest dated epigraph in verse found so far being that of 'Alāu'd Dīn Khaljī from Hansi[4]; later on verse became more and more common. It is not within the compass of this brief survey to go into details of the linguistic merits of the epigraphs; it would suffice to say that a majority of these inscriptions does not always show grammatical accuracy; far from being good literary compositions, they even betray utter disregard for elementary rules of prosody.

D. Palaeography and calligraphy

The Arabic and Persian epigraphs in India, as elsewhere,[5] have a twofold importance: historical and palaeographic. Their palaeographic aspect represents a diversity of scripts beautifully executed as also an ingenious ornamentation. Some of the inscriptions bear perfect specimens of extraordinary calligraphy and as such can compete favourably with their counterparts on paper. The main scripts used in epigraphs are Kūfic, Naskh including its variety Thulth and Nasta'līq, each executed with its distinctive conventional styles varying according to period, locality and ingenuity of the calligraphists (pls. CXIII and CXIV). Thus, two styles of Kūfic are to be found, simple and ornamental (pl. CXIII A). But the number of epigraphs in this script is very small. Most of the inscriptions of the pre-Mughul period are inscribed in Naskh in its various forms or aspects (pls. CXIII B and CXIV C). The Naskh of these inscriptions is of a vigorous, rigid and, in some cases, bold type. The script, employed in some parts of the country, especially those under the rules of Bengal and Gujarat Sulṭāns, developed an individuality of its own as is reflected in most of the inscriptions from these places. What has been termed as decorative Ṭughrā style of Bengal, also characteristic of a large number of Gujarat inscriptions, is distinctively ornamental (pl. CXIV A). The elongated shafts and curves of letters have been so arranged under this style as to form different motifs: the arrangement of curved letters across the arrow-headed ones representing the motif of bow and arrow—a device so commonly found in these inscriptions that some scholars have termed this style as 'bow-and-arrow style'; or the motif representing 'the passing of an army with raised banners, the flags being either conspicuous or disturbed by the intervention of a row of knotted ropes representing the halters some time hung below banner heads, the cluster of letters at the foot of the straight-drawn vertical lines representing the thick mass of soldiers which

[1] *E.I.M.*, 1909-10, p. 31.

[2] *Ibid.*, 1935-36, p. 51.

[3] *Ibid.*, 1917-18, pp. 33-34.

[4] *Ibid.*, p. 19. The inscription of the same king from Mathurā though fragmentary and undated is yet earlier. *Ibid.*, 1937-38, p. 60.

[5] For van Bercham's observations on epigraphical styles in other Muslim countries, see *E.I.M.*, 1913-14, Appendix C, p. 46. For illustrations of a few inscriptions from other countries carved in various scripts, see M. Ziauddin, *Moslem Calligraphy* (Calcutta, 1936).

in old times formed an interwoven group during a march'.[1] The device of bow and arrow can be made to represent, by a minor change, the motif of a row of arches or railings.[2] At times, some of the letters have been made into interesting animal-forms.

A typical example of the Ṭughrā style is that in which the text is written in such a way as to form the outlines of birds and animals. Such forms were intended to serve as a security against evil. Among these, the lion or the tiger—these being symbolic of the valour of 'Alī, 'Lion of God'—are 'freely carved on forts in the Deccan which were extensively rebuilt in the fifteenth and sixteenth centuries by the Muslim kings of Shiite faith'. The text of such inscriptions is generally some prayer, comprising a religious text or a quotation from the Qurān, the Nād-i-'Alī being more frequent.[3]

Nasta'līq made its appearance in inscriptions immediately after the first quarter of the tenth century Hijra, and within the next two hundred years it almost entirely replaced Naskh, which, except for its more artistic variety Thulth, was more or less reserved, like Kūfic in the earlier period, for religious inscriptions in Arabic. Thulth and Nasta'līq in their exquisitely beautiful form are represented by a number of inscriptions from all parts of the country as a mere glance at the plates of *Epigraphia Indo-Moslemica* will show (cf. pls. CXIII C and CXIV B).

E. Historical importance

Apart from their palaeographic value, these inscriptions are historically important. It is true that they 'do not as a rule furnish any extraneous details as are generally met with' in their other Indian counterparts; but it should be remembered, first, that the latter have attained a special importance owing to the dearth of historical sources pertaining to the earlier periods of Indian history, which is not the case with the Muslim period, and, secondly, the state-documents during Muslim period were mostly written on paper, like *farmāns*, *sanads*, etc., which, in their subject-matter, correspond to the copper-plates of the earlier period and refer to grants of land or cash-stipends and to royal mandates of various natures supplying historical information. Nevertheless, these inscriptions still afford very valuable and definite data for the reconstruction of history in its various aspects, political, social and religious. The inscriptions are at times the only source which supplies the missing links in the chronology of rulers, in spite of the availability of chronicles and historical works. Moreover, they sometimes throw light on events and personages unrecorded in literature, correct anachronisms or incongruity, prove useful in fixing the dates of important events in history where the information from other sources is confusing or conflicting. In many a case, they corroborate statements of historians or supply details left out in chronicles. They also provide links in the reconstruction of the succession-lists of public officials and families. Like coins, they have an advantage over the historical works insomuch as they have preserved unto us the correct names of places and persons, this uncorruptibility of names not being vouchsafed by chronicles. The inscriptions on various buildings, if carefully used, are also a valuable source for the history of architecture. Below is given a brief résumé of a few historically important epigraphs illustrating some of the above remarks.

The kingship of Kaikā'ūs, son of Nāṣiru'd Dīn Bughrā Khān, whose name was omitted from the list of the rulers of Bengal as given by Persian historians, is affirmed by

[1] *E.I.M.*, 1923-24, p. 18 and pl. VII.
[2] *Ibid.*, 1935-36, pl. XXXVI(a).
[3] *Ibid.*, p. 44, pl. XXX(a).

no less than three inscriptions, respectively from Lakhīsarai, Monghyr District, Devīkoṭ, Dinājpur District, and from Ẓafar Khān's mosque at Tribeni, Hooghly District.[1] Three inscriptions from Antur fort and another from Kamānī mosque at Junnar, Poona District, are helpful in fixing the dates of Burhān Niẓām Shāh III of Ahmednagar,[2] while the one from the tomb of Kamāl Maulā at Dhār in Mālwā shows that Maḥmūd Tughluq was the ruling king already in A.H. 795, and not 796 as asserted by historians.[3] It was mainly on the basis of the inscription from the Jāmi' Masjid at Golconda that Yazdani tried to prove that Sulṭān Qulī Quṭbu'l Mulk did not assume independence in A.H. 918 (A.D. 1512) as stated by Firishta but in A.H. 924 (A.D. 1518). The inscription mentions the name of Maḥmūd Shāh Bahmanī as the reigning monarch and styles Sulṭān Qulī who built the mosque as 'Sulṭān Qulī Quṭbu'l Mulk' without the title of Shāh.[4] No doubt, the inscription fully establishes that Sulṭān Qulī did not assume royal titles until A.H. 924, but whether he did so only in that year is still open to question. The inscription at the foot of his grave at Golconda[5] and two more from Koṇḍapalli bearing the dates A.H. 931 and A.H. 945[6] should not be lost sight of while deciding the question of the assumption of kingship by Sulṭān Qulī. In these inscriptions he is only mentioned with his title Quṭbu'l Mulk.

An inscription dated A.H. 794 (1391-92) carved on a tablet lying near the tomb of Haḍrat Ṣūfī Sarmast at Sāgar, District Gulbarga, mentions the name of the Bahmanid king as Muḥammad Maḥmūd. Firishta, while objecting to the statements of the author of the *Futūḥu's Salāṭīn* and some other writers of Gujarat and Delhi, who had styled the king as Muḥammad Shāh Bahmanī, gave the name of the king as Maḥmūd Shāh Bahmanī. This inscription thus shows the lack of justification of Firishta's remarks against the above authors.[7] The inscription of Walīu'llāh, son of Maḥmūd Shāh Bahmanī, dated A.H. 932, carved on a tablet originally lying in the 'Āshūr Khāna at the same place, provides valuable evidence in view of the fact that the chronology of the later Bahmanids is not very clear either from the lists of medieval and modern authors or from their coins.[8] The style in which the title *Sawāī* has been used with Mallū Khān's name—Sawāi Mallū Khān son of 'Ādil Khān Sawāi, in his inscription settles conclusively the controversy regarding the significance of this word and shows that it has been used as an honorific title and has nothing to do with the town Sāwa.[9]

The inscription on Ẓafar Khān's mosque at Tribeni, District Hooghly, dated A.H. 713, mentions the names of the ruling king Fīrūz Shāh of Bengal (1302-18) and of his deputy Ẓafar Khān with full titles, which are not to be found on coins or in contemporary history.[10]

The name of Ẓafar Khān Fārsī, a celebrated noble under Fīrūz Shāh Tughluq and governor of Gujarat, can now be ascertained for the first time from an inscription from Una, District Sorath in Saurāshṭra. This inscription was published in the *Corpus Inscriptionum*

[1] *E.I.M.*, 1917-18, pp. 8-15.
[2] *Ibid.*, 1919-20, pp. 12-15; 1933-34 (Supp.), pp. 22-23.
[3] *Ibid.*, 1909-10, p. 15.
[4] *Ibid.*, 1913-14, pp. 47-48; 1915-16, p. 19, n. 2.
[5] *Ibid.*, 1915-16, p. 27.
[6] These inscriptions are being published in *Epigraphia Indica, Arabic and Persian Suppl.*, 1953 and 1954.
[7] *E.I.M.*, 1931-32, pp. 10-11.
[8] *Ibid.*, 1931-32, pp. 19-20.
[9] *Ibid.*, 1939-40, pp. 11-12.
[10] *Ibid.*, 1917-18, pp. 33-34.

Bhavnagari in 1889.[1] The reading of the inscription as given there being miserably corrupt, especially as regards the name and date, the importance of the epigraph was not recognized so far. The correct reading of the name and date is Muḥammad surnamed Tāj and 768 respectively. He is further mentioned therein as having received the title Ẓafar Khān from the said king.

An interesting inscription, appearing on a well in Narsāpur in Hyderabad State, mentions the construction of the well, purer than the Kauthar, by Khāfī Khān, the celebrated author of the *Muntakhabu'l Lubāb*, a historical work in Persian. The important feature of the inscription is the spelling of the title of Khāfī Khān (his original name being Muḥammad Hāshim), which has given rise to much speculation as regards its significance.[2] Another historian of Aurangzīb's reign, Rāi Bindrāban, author of the *Lubbu't Tawārīkh*, finds mention in an inscription, also on a well, at Elgandal, Hyderabad State.[3]

Of a number of inscriptions recording royal orders and *farmāns* we shall notice only three. The bilingual epigraph from the Pangal Tank in Nalgoṇḍā District lays down the share of the proceeds of the lands irrigated by the tank to be divided between the king, the subjects (tenants) and the Turks (army). The share of the army was nearly as much as that of the king and the tenants combined.[4] A Persian inscription in verse, originally from Dabhol, about 85 miles south of Bombay, records briefly the purport of a *farmān* issued in A.H. 1062 under the order of Muḥammad 'Ādil Shāh of Bījāpur. The prevailing practice of confiscation by the local authorities of the property of an individual, whether a Hindu or a Muslim, who died without leaving a direct heir, seems to have caused much inconvenience to the public, and on the matter being represented to the king, he issued a *farmān* to discontinue it.[5] A couple of inscriptions of the reign of Aurangzīb set up at various places in the former Jūnāgarh State contain a notice issued by Shāh Wardī Khān, governor of Sorath in A.H. 1097, stopping the practice of compelling the merchants to purchase the produce of the lands of the governors in whole lots and levying certain prohibited imposts.[6]

Among the epigraphs commemorating historical events such as conquests of towns, one from the right door-jamb of the Phūṭā Darwāza of the fort at Asīr, District Nīmār, is very interesting. Comprising nine verses in Persian, it gives a brief résumé of events connected with the fort from A.H. 1034 thus: Prince Shāh Jahān's march towards east from the Deccan in that year, leaving the fort with all his effects in it in the custody of Raja Gopāldās; the Raja's war with Prince Parwīz and Mahābat Khān for two years until Shāh Jahān's return and the Raja's victory with the reinforcement of the latter; his elevation in rank and receipt of the title of Rāj Māndhātā; Shāh Jahān's march to Thatta, where the Raja and his eldest son, Raja Balarām were killed; the appointment, in 1063, of the other son of the Raja, Kunwar Manohar Dās, as the commandant of the fort and his construction of the gateway in the following year.[7]

Among a few inscriptions which throw light on the Hindu-Muslim relations are some from the tomb of Shāh Ramaḍān at Madhi, District Ahmednagar, which, though

[1] The inscription will be re-edited in a future issue of the *Epigraphia Indica, Arabic and Persian Suppl.*

[2] *E.I.M.*, 1917-18, pp. 4-7.

[3] *Ibid.*, 1919-20, p. 28.

[4] *Ibid.*, 1925-26, p. 23.

[5] *Ibid.*, 1933-34, p. 9.

[6] *Corp. Insc. Bhav.*, pp. 47 and 48.

[7] *E.I.M.*, 1925-26, p. 7.

not of much historical value, show the reverence in which the Maratha leaders mentioned in them held Pīr Shāh Ramaḍān.[1] Two Persian inscriptions from a temple in Dhum in Madhya Bharat, though undated and without mention of any ruler, are interesting inasmuch as their subject-matter presents an example of veneration and toleration of a Hindu place of worship by the Muslims.[2] Similarly, Rāo Gumānjī Sindhiya and Bālā Rāo Ingliya are stated to have constructed the *dālān* (hall) in the *dargāh* of Shāh Ḥusain Khing Sawār at Tārāgarh, Ajmer, according to an inscription appearing on it.[3]

[1] *E.I.M.*, 1933-34 (Supplement), pp. 16-17.

[2] *Ibid.*, 1935-36, p. 54.

[3] *Ibid.*, 1911-12, p. 46. For further instances illustrating the historical importance of inscriptions, see *Ancient India*, no. 5 (1949), pp. 58-61.

MUSEUMS

By C. SIVARAMAMURTI and J. K. ROY

CONTENTS

1. THE MUSEUMS IN INDIA: A SURVEY

By C. SIVARAMAMURTI

A. THE GROWTH OF MUSEUMS IN INDIA

THE genesis of the museum-movement in India is to be traced to the Asiatic Society at Bengal founded by Sir William Jones in 1784 (above, p. 4). By 1796 the Society had to consider seriously the question of suitably housing the many 'curiosities' that had accumulated by donation by its members from time to time. In 1814, at the instance of Dr. Nathaniel Wallich, who offered his services as the honorary curator, the Society established a museum comprising two sections, one archaeological and ethnological and the other geological and zoological. The museum grew rapidly. In 1836 the Society, finding itself financially weak, memorialized the Government for funds and persisted in its demand, till, in 1839, the Court of Directors of the East India Company sanctioned an amount for the maintenance of the museum and also authorized the Government of India to make other grants from time to time for special

purposes. After protracted negotiations between the Society and the Government for housing the collections the present building of the Indian Museum (pl. CXV) was constructed in Calcutta and made ready for occupation in 1875.

As early as 1819 efforts for forming a museum had been made in Madras, and the Madras Literary Society, an auxiliary to the Asiatic Society of London, desired to have a museum of economic geology in 1829. In 1843, at the request of the Society, the Court of Directors of the East India Company agreed to the formation of a central museum in Madras. In 1850 Assistant Surgeon E. G. Balfour offered his services as officer-in-charge of the proposed museum, and his personal enthusiasm was greatly responsible for its speedy development. Dr. Balfour also encouraged the formation of local museums at Bangalore, Bellary, Coimbatore, Cuddalore, Ootacamund, Secunderabad, Mangalore and Tiruchirāpalli. Six museums were actually started, but all of them were closed down by 1861. General Collin organized a museum at Trivandrum (pl. CXVIII) in 1857.

The idea of a museum in Bombay originated in 1848. The collections, got together for the great exhibition of London in 1851, gave it an impetus, and in 1857 a museum of economic products was established. It was, however, not till 1871 that the building of the Victoria and Albert Museum was made available for it.

The museums at Lucknow and Nagpur were established in 1863 and that at Lahore in the following year. The Mysore Government Museum at Bangalore came into existence in 1865. The year 1875 saw the creation of the museum at Mathurā, the next year of the one at Raipur and 1886 of the one at Srinagar.

The celebration of the jubilee of Queen Victoria in 1887 ushered in a new era of the rise of several museums in India as in other parts of the British Empire. The museums at Jaipur, Udaipur, Rājkoṭ and Vijayawāḍa are among those that arose on the occasion.

But the greatest impetus for the museum-movement in the country was during the time of Lord Curzon, whose keen interest was matched only by the enthusiasm of Sir John Marshall, the first Director General of the re-organized Archaeological Survey. From 1902 there was a regular sequence of events in the history of the building up of museums, as several site-museums and local museums were established, some directly by and others through the encouragement of the Archaeological Survey. The museums at Ajmer, Bāripadā, Chambā, Jodhpur, Gwalior, Bījāpur, Khajurāho and Dacca, established within a space of ten years from 1903, owe their existence to the keen interest evinced by the Archaeological Survey, which was also subsequently responsible for the establishment of the Central Asian Antiquities Museum at New Delhi. The museums at Māldā, Bījāpur, Dhār and Peshawar and in the Tāj at Agra, as also the ones at Pagan and Mandalay, in Burma were established at the instance of Lord Curzon.

Though the creation of the Prince of Wales Museum in Bombay was conceived even in 1904 and grants were secured both from the Government and donors, the building, which had been completed in 1914, was made available only in 1921 to house the collections of the Bombay Branch of the Royal Asiatic Society, the Anthropological Society, the Bombay Natural History Society, the Tata Collections and the material that had been collected by the Western Circle of the Archaeological Survey. The Museum is also fortunate in securing liberal presentations from private collectors like Sir Ratan and Sir Dorab Tata and Sir Akbar Hydari.

In the wake of this creative activity in the formation of museums several States, with collections brought together by their respective Departments, established their own museums. Thus came into being the museums of Indore, Hyderabad, Himatnagar, Jāmnagar, Kolhāpur, Padmanābhapuram and Rewa between the years 1927 and 1947.

The enthusiasm of learned societies and even individuals accounts for the springing up of several museums in addition to those mentioned above. The Museum of the Bharata Itihasa Samsodhaka Mandal at Poona is an example of this category. The Museum of the Kamarupa Anusandhan Samiti of Gauhāṭi ultimately developed into the Provincial Museum of Assam. It is interesting that a historical society of a college could build up the nucleus of a provincial museum, and, in fact, the Provincial Museum of Orissa at Bhuvaneśwar is composed of the material from the Museum of the Historical Society of the Ravenshaw College. The Bangiya Sahitya Parishad Museum, opened in 1910, is another endeavour of collective effort. The Museum of the Varendra Research Society of Rājshāhi is due to the indefatigable efforts of Kumar Saratkumar Ray of Dīghāpatiyā, and it occupied its present building in 1919. In the same year the Bharat Kala Bhawan at Banaras was established through the efforts of Rai Krishna Das. The Museum in the Theosophical College at Madanapalle owes its existence to the personal collection of Dr. J. H. Cousens, and similarly the Museum of the Indian Historical Research Institute in St. Xavier's College, Bombay, owes its material to the efforts of Rev. H. Heras, S.J.

It was in Calcutta that the first full-fledged University Museum, named after that great patron of learning, Sir Asutosh Mookerjee, came into existence. This created a spirit of emulation, as a result of which similar museums are springing up in other universities. Thus, in the Allahabad University there is the nucleus of a Kauśāmbī Museum, and another museum exists in the Gurukula University, Hardwār. The Banaras Hindu University has now taken over the Bharat Kala Bhavan Museum. In recent years the stimulus in archaeological exploration and excavation has been on the increase among societies and universities, as a result whereof several museums have grown up. The Vaiśālī and Gayā Museums are examples of this.

Another important phase of museum-growth, specially in south India, is the springing up of small but interesting museums in large temples. The Indian temple has always been a great institution for the cultural, economic, social, educational and the religious needs of the folk and has acted more or less as a museum. It is, therefore, in the fitness of things that museums should spring up in temples. Of the temple-museums mention may be made of the Rājarāja Museum in the Bṛihadīśvara temple at Tanjore, which recently had a rebirth, so to say, in another form as the Tanjore Art-gallery, the museums of the Śrīrangam temple and of the Mīnākshī temple at Madurai, the first containing some fine sculptures in stone and metal and the other two a collection of splendid ivories.

B. Museums and the Archaeological Survey

In the earliest stages of the museum-movement the nucleus of the collections has mostly been geological or biological, but with the formation of the Archaeological Survey of northern India by Lord Canning and the appointment of Cunningham as the Archaeological Surveyor (above, p. 10), the place of archaeology in museums came to be felt. Through the indefatigable work of Cunningham the museums came to possess rich archaeological collections in which they pride today. With the commencement of the present century, which saw the rejuvenation of the Archaeological Survey, the archaeological sections in museums were enriched, and several museums exclusively devoted to archaeology developed as institutions demanding attention (above, p. 234). The personal interest and enthusiasm of Lord Curzon in understanding and preserving the glorious past of India by maintaining monuments and starting museums, as also the sympathetic help of Sir John Marshall, accounted for several archaeological museums. Most of the Indian museums

are thus indebted for their development, if not their origin, to the Archaeological Survey, which itself is directly responsible for the maintenance of some of them.

To say this is not to forget that in the beginning it was the enthusiasm of individuals like Colonel Colin Mackenzie and members of such societies as the Asiatic Society of Bengal that had developed museums, which subsequently enriched their collections by frequent donations. Long before the Archaeological Survey was constituted, Cunningham himself had presented, as early as in 1835-36, to the Asiatic Society a large collection of Buddhist images of the Gupta period from Sārnāth, which now adorn the sculpture-gallery of the Indian Museum (pl. CXVI). The notable Mathurā sculptures of the Asiatic Society collection, now in the Indian Museum, were presented by the Hon'ble G. F. Edmondston, who was a Lieutenant Governor of the North-West Province, now called Uttar Pradesh. The fine sculptures from Java, which form a unique collection in the Indian Museum, were presented to the Asiatic Society by the members of the Society from time to time, thanks to the brief British connexions with Java.

The Indian Museum had, therefore, the nucleus of its archaeological section by the sixties of the last century, when Cunningham became the chief of the Archaeological Survey of India and further enriched it.

As the Director General of Archaeology, Cunningham presented to the Indian Museum several Gandhāra sculptures, antiquities from Bodh-Gayā and, more important than all, the magnificent Bharhut rail and gateway (pl. CXVII), which form the most valuable treasure in the Museum. Cunningham did not stop with the presentation of antiquities but helped even in arranging the material in the Museum and his arrangement has essentially continued with necessary modifications down to this date.

How thankful should we be to Cunnigham, who not only discovered the ruins of the Bharhut Stūpa in 1873 but dug them up and saved them by their removal to the Museum. He requested the Raja of Nagoḍ, in whose territory stood Bharhut, to present the sculptures to the Government and, even at the risk of being criticized as being a 'vandal'[1], carried away a portion of the rail and gateway, which are almost the only extant remains of that magnificent Stūpa barring the small collection in the Allahabad Museum. We cannot but recall with regret that of whatever was left behind every stone that was removable was carted away by the people for building purposes.

This brings to our mind what Colonel Colin Mackenzie did for India in saving what he could the remains of the Amarāvatī Stūpa that he had discovered in 1797, and, except those that he sent to the Asiatic Society and to Masulipatam, all the marbles that lay exposed were burnt into lime by the villagers, in this case also for building purposes, thus destroying one of the greatest monuments, except for portions of the rail and carvings that form the priceless treasures of the Madras Museum and the British Museum in London.

The Madras Museum was fortunate in getting a fine collection of Gandhāra sculpture in the eighties of the last century, thanks to the generosity of Major H. H. Cole, but, unfortunately, what could have been the second greatest collection of Gandhāra sculpture in an Indian museum was returned hastily by Dr. E. Thurston, who reversed the policy of his predecessor by narrowing down the scope of the Museum to strict provincial limits, and the collection made by Bidie's efforts was scattered or stored away.

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[1]Professor R. C. Childers thus wrote about the removal of the Bharhut rail and gateway: 'I hear of a proposal to remove them from Bharhut. The scheme carries with it a certain aroma of vandalism (fancy carting away Stonehenge!).' A. Cunningham, *The Stupa of Bharhut* (London, 1879), p. vii.

The intimate connexion between museums and the Archaeological Survey has been accentuated from the beginning of the present century. Thanks to the efforts of Dr. D. B. Spooner, the Peshawar Museum was greatly enriched by the wealth of sculptures he had unearthed at Sahri-Bahlol, Takht-i-Bāhī, Shāhjī-kī-Ḍherī and other places in Gandhāra. One of the most brilliant discoveries in this area, the relic-casket of Kanishka (pl. LVI), forms the most valued treasure of the Peshawar Museum where it is deposited. If Cunningham's efforts laid the foundation of the Gandhāra collections in the Indian Museum in Calcutta and the Museum at Lahore, it was the excavations in the frontier region at the beginning of the present century (above, p. 135) that account for the enormous growth of that collection in the Indian Museum, which, beyond doubt, is the richest in India today. Sir John Marshall felt that the officers of the Archaeological Survey should work in close co-operation with the various museums in the Provinces and States. It was this policy that accounted for the archaeological collections made by the Superintendents of different Circles on behalf of the Provincial museums. The Iron Age antiquities from Ādichchanallūr and Perumbair and several Buddhist sculptures and antiquities from Amarāvatī (above, p. 236) and other places, including the Amarāvatī bronzes, which were excavated by Alexander Rea, the Superintendent of the Southern Circle, are now in the Madras Museum. The most important sculptures of the Jaina section in the same Museum, those from Dānavulapāḍu, are also there through the efforts of the Archaeological Survey. The Madras Museum collection of copper plates, the largest in the world like that of its bronzes, has been helped in its growth by the Epigraphical Branch of the Department. Similarly, the archaeological collection of the Prince of Wales Museum in Bombay has been augmented through the efforts of the Western Circle of the Survey. Fine sculptures from Aihoḷe and Elephanta are in the collection of this Museum.

The interest and enthusiasm of Dr. J. Ph. Vogel, a distinguished officer of the Survey, was in no small measure responsible for the stimulus to the museum-movement in India. The Chambā Museum owes its existence to him, and the rich collection in the Mathurā Museum rapidly built up by Rai Bahadur Radha Krishna was due to his keen interest and subsidies made available by him. The discovery of portrait-figures, including that of Kanishka (pl. LX B), is too romantic a story to be summarized in a few words. The Museums at Lucknow and Delhi and the Indian Museum in Calcutta equally enjoyed his kindly interest.

The Archaeological Superintendents have been variously associated with the administration of the archaeology sections in the Provincial museums all over the country, and that accounts for the prompt acquisition of treasure-trove finds of sculptures and bronzes and coins. In Madras, till an archaeological assistant was appointed in the Museum, the local Superintendent was the honorary officer to help it in archaeological matters. Similarly the Superintendent of the Frontier Circle was the honorary curator of the Peshawar Museum. The Superintendent of the Western Circle still acts as the honorary curator of the Bījāpur Museum. In addition, the Superintendents of the Survey have been on the committees of several museums in India. It is not only by advice and help but sometimes by liberal grants that the Department has helped the growth of the museum-collections as at Mathurā, Madras, Lucknow and other places.

Material from important sites has been freely distributed among the museums by the Archaeological Survey. Thus, representative objects from Mohenjo-daro found their way in almost all leading museums in India. Loan-collections from the Archaeological Survey are found in all principal museums, and among them is the rich Pearse collection of gems and coins in the Indian Museum and a large number of Nālandā bronzes in the Patna Museum.

The material excavated at various sites was generously made available to the museums of the region. Thus, the Patna Museum was enriched by the finds at Basārh and Pāṭaliputra (above, pp. 145 ff.), the Lucknow Museum by the antiquities from the excavations at Bhīṭā, Saheṭh Maheṭh (above, pp. 144 ff.), Sankisā, etc., and the Museum at Quetta by the material from Nāl (above, p. 83), which, however, was transferred to the Indian Museum after the earthquake disaster of 1934. Not only by direct creation but also by the indirect friendly policy of the Archaeological Survey was the building up of museums pushed ahead. In the arrangement of the material in the museums also the help of the Survey was sought and freely given. For example, Rai Bahadur R. P. Chanda helped the museums at Mathurā, Khiching and Bāripadā in this respect.

In the preparation of catalogues, guide-books and other publications the Archaeological Survey has equally lent help. The Amarāvatī sculptures in the Madras Museum had the first descriptive account in the monograph by Burgess.[1] It was Cunningham who first wrote on the Bharhut collection in the Indian Museum.[2] He also prepared a descriptive list of the Buddhist sculptures in the Lahore Museum.[3] A handbook of sculptures of the Peshawar Museum was first prepared by Spooner[4] and later revised by Hargreaves.[5] Vogel, at the request of the Collector of Mathurā, prepared a catalogue of the Museum.[6] It was Vogel again who not only supplied valuable material collected during his exploration in the Chambā State and helped the formation of the Museum but also wrote a detailed catalogue for it.[7] *The Buddha Story in Stone* by Hargreaves discusses selected Gandhāra sculptures in the Lahore Museum.[8] V. Natesa Aiyar wrote the descriptive list of exhibits in the archaeological section of the Nagpur Museum.[9] A memoir by Hirananda Sastri on some sculptures in the Lucknow Museum mentions additions to the collection of that museum.[10] Marshall not only did so much by way of excavation and conservation at Sānchī for several years (above, p. 160) but also arranged for the writing of a catalogue of antiquities in the local Museum.[11]

When, after 1910, the Archaeological Survey came to be more closely associated with the Indian Museum, there was a considerable re-arrangement and enrichment of the collection from the resources of the Survey by way of excavation and exploration, and in addition several monographs and handbooks were written by successive Superintendents like R. D. Banerji, R. P. Chanda and N. G. Majumdar.[12]

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[1] J. Burgess, *The Buddhist Stupas of Amaravati and Jagayyapeta in the Krishna District, Madras Presidency*, Arch. Surv. Ind., New Imp. Series, VI (London, 1887).

[2] A. Cunningham, *op. cit.*

[3] A. Cunningham, *Descriptive List of the Principal Buddhist Sculptures in the Lahore Museum.*

[4] D. B. Spooner, *Handbook to the Sculptures in the Peshawar Museum* (Bombay, 1910).

[5] H. Hargreaves, *Handbook to the Sculptures in the Peshawar Museum* (Calcutta, 1930).

[6] J. Ph. Vogel, *Catalogue of the Archaeological Museum at Mathura* (Allahabad, 1910).

[7] J. Ph. Vogel, *Catalogue of the Bhuri Singh Museum at Chamba* (Calcutta, 1909).

[8] H. Hargreaves, *The Buddha Story in Stone* (Calcutta, 1914).

[9] V. Natesa Aiyar, *Nagpur Museum, Archaeological Section, Introduction to the Descriptive List of Exhibits* (Allahabad, 1914).

[10] Hirananda Sastri, *Some Recently Added Sculptures in the Provincial Museum, Lucknow*, Mem. Arch. Surv. Ind., no. 11 (1922).

[11] Muhammad Hamid, R. C. Kak and R. P. Chanda, *Catalogue of the Museum of Archaeology at Sanchi, Bhopal State* (Calcutta, 1922).

[12] R. D. Banerji, *Eastern Indian School of Mediaeval Sculpture*, Arch. Surv. Ind., New Imp. Series XLVII (Delhi, 1933); R. P. Chanda, *The Beginnings of Art in Eastern India with special reference to Sculptures in the Indian Museum, Calcutta*, Mem. Arch. Surv. Ind., no. 30 (1927); N. G. Majumdar, *Guide to the Sculptures in the Indian Museum*, 2 pts. (Delhi, 1937).

C. Museum-buildings

The latest museums have had better luck in their buildings than the earlier ones, for the latter are much at a disadvantage in being housed in buildings quite antiquated and unsuitable, judged by modern museum-standards. In the earlier days any easily available building was usually considered fit for housing a museum, and this has often greatly jeopardized the effective display of even the best material. The Lucknow Museum is an example to the point, where the defect is aggravated by the location of the Museum in two buildings separated by some distance. In the case of some of the museums of recent origin it is indeed gratifying to note that the fine new buildings have amply compensated the few years of cramped existence in readily available old buildings. The Allahabad Museum, for example, will soon have an excellent building, well-planned and laid-out, in the place of the old rooms in the municipal office. The new building of the Bharat Kala Bhawan Museum in the Banaras University is another fine structure. An excellent building has recently been completed for the housing of the Museum at Raipur, where it has just started its almost new life. The Mathurā Museum, which was originally housed unsuitably, is now in a well-planned building with ample scope for expansion. The Bombay Museum was planned for its purpose and has, therefore, been fortunate. The Madras Museum, though well laid-out on spacious grounds, has yet its finest block in the latest one, planned for its archaeological galleries. A proper planning for museum-buildings is most essential, and without well-lit suitable galleries even the best material cannot be effectively presented. Again, museums that started their existence in crowded centres without allowing sufficient space around for expansion are bound to get cramped. A museum is essentially a growing institution and requires ample facilities for growth. The Indian Museum, for example, which is the finest in the east, not to speak of India, has unfortunately not only an old and inadequate building but also lacks space around it for further growth.

D. Museum-services

In a properly constructed museum there should be a decent laboratory with equipment for the chemical treatment of the museum-material in addition to the usual galleries, working rooms and storage-space. Ideal provision for this exists in the Madras Museum, where, in addition, the library, which has developed into a large public one, greatly facilitates research. A good library is an essential factor in a museum.

In the early days of the museum-movement in the country, established museums, like those at Calcutta, Madras, Lucknow, etc., used to present freely material to sister-institutions that were being started, and the Prince of Wales Museum at Bombay is amongst those that have benefited by gifts. The essential policy of museums should be one of a broad spirit for encouraging presentation to and exchange amongst other institutions and for allowing a free flow of material.

For the proper dissemination of the history and culture of the country it is not enough if there is a single museum at any spot containing all the phases of its art. There should be as many as possible with sufficient material for presenting a bird's eye view of Indian art and culture as a whole. It is in the Madras Museum, of which Thurston restricted the scope and returned the Gandhāra sculptures to the province of its origin (above, p. 236), that, years later, Dr. F. H. Gravely, with a very wide and liberal outlook, arranged for presenting every phase of Indian art in its new archaeological extension. In this the co-operation of the Archaeological Survey and other museums in India was sought and readily obtained.

There should be at least four or five museums in the country, which should be conceived on a national basis for the acquisition and display of material. In a vast country like India, with a rich legacy from the past, this objective should not be difficult to achieve.

The best school-services are provided probably in the Madras Museum. It is a museum where school-children, by frequent visits with their teachers, gather knowledge of several things that they may have read in their text-books. University students, specially of the post-graduate course, can make the best use of the material in a museum, for it is impossible for students of art, iconography and numismatics to dispense with the first-hand study of the material in the museums. In this respect the archaeological section of the Indian Museum is a great source of inspiration to the students and professors of several universities, specially that of Calcutta.

Besides school-services it should be the endeavour of every museum to devote attention to research and publication, as it is one of the best media by which a museum can get into touch by exchange in thought and material with other museums in the world for mutual benefit. It is due to the indefatigable work of Dr. Gravely that the Madras Museum leads today all the other museums in India in the matter of research-publications. It is most heartening that the Prince of Wales Museum at Bombay has recently started a series of bulletins of its own.

Picture-postcards, guides and pamphlets have their own value for the public. The picture-postcards of the Madras Museum and those of Ajaṇṭā, printed in photogravure, are amongst the best in India, but it should be noted that there are several other museums that have their own sets of picture-postcards; even the Asutosh Museum of Fine Art, Calcutta, an institution of comparatively recent origin, has also a set of picture-postcards to its credit, not to speak of the Indian Museum, the Prince of Wales Museum, the Museums of Patna, Baroda, Ajmer, Gwalior and the site-museums of the Department of Archaeology. A few museums also have fine halls for popular lectures, which are equally important amongst the activities of a museum, and useful collections of lantern-slides to illustrate them.

Notwithstanding what has been achieved in the sphere of museums in India, it must be admitted that the progress has left much to be desired and, on the whole, the country has not kept abreast of the museological developments in the west. Lack of adequate funds, suitable buildings and trained curatorship may sum up the causes for this and have collectively and individually contributed to the general defects in the majority of the Indian museums, viz., the over-congestion of the exhibits and the absence of reserve-collections for study and exchange, of proper labels, charts, diagrams, dioramas, etc., of laboratory-facilities, of children's sections and of the numerous other factors which enliven the good museums of the west. In recent years there has been at least a growing consciousness about these shortcomings, and this will no doubt eventually bring with it a healthy development of museums.

The curator is the living force in a museum, but nowhere else is a curator more neglected than in India, though prodigious knowledge and enormous achievements are expected of him. Proper facilities for visiting museums at home and abroad for widening his horizon and ample funds should be provided, without which it is idle to expect better results in display and exposition. If a scholar should sacrifice ambition, the curator alone should not be singled out for this.

2. MUSEUMS OF THE DEPARTMENT OF ARCHAEOLOGY

By J. K. Roy

A. The Museums Branch

The report by S. F. Markham and H. Hargreaves, published in 1936 by the Museums Association, London, clearly brought out the unsatisfactory picture of the museum-movement in India, the main reasons being ascribed to mass-illiteracy, inadequate funds and lack of proper awakening on the part of the rich and the influential intelligentsia. So far as the activities of the Archaeological Survey of India were concerned, the report stated: 'Archaeology came to the fore as a result of the formation in 1862 of the Archaeological Survey and the activities of Sir Alexander Cunningham, whose researches awakened widespread interest in Indian archaeology . . . But the greatest activity resulted from the re-organization by Lord Curzon's Government of the Archaeological Survey in 1902 . . . The history of the archaeological museums in India is largely the record of the labours of the then appointed Director General, Sir John Marshall . . . The discoveries of the Archaeological Survey, by adding so substantially to the history of India and awakening world-wide interest in its art and antiquities, have stimulated in no small measure feelings of nationalism and directed the attention of Indians to the need for preserving their archaeological treasures.'[1]

This emphasizes the intimate connexion between the museums of India and her Archaeological Survey, a theme already dealt with at some length above (pp. 235 ff.). The policy of the Survey has been to maintain small museums in the vicinity of sites subjected to extensive excavations to enable the serious student and the visitor alike to study the antiquities in their proper context. It has not only set up several such site-museums to be cared for by its own officers, but has also acted on behalf of and helped several States in exploring ancient sites within their territories and building up suitable museums near them in accordance with its own policy; the Museum at Sānchī is a concrete example of this.

In his report submitted to the Government of India in 1939, Sir Leonard Woolley recommended the closing down of most of the site-museums maintained by the Survey, but considering the cultural importance of the sites concerned and the possibility of fostering education, if rightly pursued, the Central Government decided to retain them. Thus encouraged, the Survey set upon itself the task of striving for results yet unachieved, viz., the expansion of its sphere and activities for the spread of cultural centres in different parts of the country, as fully as possible. One of the recommendations of the Markham-Hargreaves report, viz. that the museums of the Department of Archaeology should be brought together under one administrative control, was therefore given effect to in 1946, when the Museums Branch of the Department came into existence under an officer entrusted with the charge of the Central Asian Antiquities Museum and seven other existing site-museums, viz., those at Mohenjo-daro, Harappā, Taxila, Delhi Fort, Sārnāth, Nālandā and Nāgārjunakoṇḍā, which had so long functioned under the Circle Superintendents concerned or the Director General of Archaeology himself, the Central Asian Antiquities Museum having been separately managed by a Curator directly responsible to the Director General. The effect of the change became noticeable in no time, since a unified control could bring greater attention and funds to the museums than could be expected in the old system.

[1] S. F. Markham and H. Hargreaves, *Museums of India* (London, 1936), pp. 33-44.

The Museums Branch soon made itself felt when, in early 1947, it organized an exhibition of Asian art and archaeology in New Delhi on the occasion of the Inter-Asian Relations Conference with the co-operation of a number of museums including the Provincial ones and those of the Indian States. Exhibits were also received for the purpose from the Kabul Museum, Afghanistan, and the École Française d'Extrême-Orient, Hanoi, Indo-China, and a catalogue was specially prepared for the event. The exhibition thus arranged was highly appreciated by the foreign delegates attending the Conference and the large number of Indian visitors as it offered a visual commentary on India's international contacts in the past with her neighbours on the east, west and north.

In the same year came the Partition of India, resulting in the loss of the site-museums at Mohenjo-daro, Harappā and Taxila to the Indian Department of Archaeology. However, as a result of successful negotiations between India and Pakistan the Museums Branch was able to obtain or retain representative objects from these three museums. Another event of the year, ultimately resulting in the creation of the nucleus of the National Museum at New Delhi (below, p. 247), was that the Royal Academy of Arts in England having secured the active co-operation from the Government of India in organizing an exhibition of Indian art in London, a grand collection of selected art-objects belonging to different institutions from all over India was sent out to London, and the Museums Branch contributed in no small measure to this collection.

From 1947 the Departmental museums have continued to make steady progress: galleries have been re-arranged; labels and historical notices have been revised; new materials have been provided as needed; library and allied facilities are being extended; and a closer contact with the neighbouring educational institutions is being maintained. Picture-postcards have been introduced in some of the museums, viz., at Sārnāth and Nālandā, and the Department proposes to provide similar sets for the other museums as well. Amenities to visitors, such as good roads to the museums, refreshment-stalls and rest-houses, are also under the consideration of the proper authorities.

The Museums Branch, as has already been stated, became somewhat crippled with the loss of the three important museums at Mohenjo-daro, Harappā and Taxila, but it has already made headway with regard not only to the proper maintenance of its remaining museums but also in creating some new ones and shouldering the responsibilities of a few others which previously existed under different controls. The Central Asian Antiquities Museum, which remained closed since the last War, was opened again this year with re-arranged galleries and improved equipments, including photographic, modelling and drawing sections, and a chemical laboratory, where the preservation of silk and wall-paintings, textiles and other objects, as well as connected chemical analysis and examination of objects of archaeological interest, are carried out under the supervision of an Assistant Archaeological Chemist. The museums at Amarāvatī and Fort St. George in Madras, which had so long functioned under the respective Circle Superintendents of the Department, and those at Sāñchī, Koṇḍāpur (Hyderabad) and Khajurāho (Vindhya Pradesh), which had been under the respective States, have now come under the administrative control of the Museums Branch, which is just now also organizing a museum at Hampi to house the numerous sculptures, lying scattered all over the extensive ruins of the ancient Vijayanagara (above p. 165).

Today, the Museums Branch, forming a strong limb of the Department of Archaeology, maintains the Central Asian Antiquities Museum and about a dozen site-museums, under a unified scheme and has contributed not a little to the formation of the National Museum. The Branch, though formed rather late in the annals of the Department of Archaeology, has no doubt been a step forward and has already more than justified its existence.

Apart from the Central Asian Antiquities Museum and the site-museums, the Department of Archaeology is also responsible for administering and financing the Archaeological Section of the Indian Museum, which has been referred to in the preceding pages (pp. 236 and 238). The unrivalled collection of antiquities in the Museum include prehistoric objects, Indus valley specimens, the Rampurwā lion-capital of Aśoka, Bharhut rail and gate, Gandhāra and other sculptures fully representative of the art of India, particularly northern, Indo-Muslim inscriptions and architectural pieces and a most valuable collection of coins, which make it the richest archaeological museum in India.

B. The Central Asian Antiquities Museum

Formed in 1929, the Museum is constituted of the collections brought by Sir Aurel Stein from his expeditions to Chinese Turkestan in 1900-01, 1906-08 and 1913-16 illustrating India's cultural expansion in Central Asia during the first few centuries of the Christian era. The collections form, as it were, a national trust. Stein's explorations, as also those of the French, Russian and German archaeologists, revealed a cultural tie that had existed between the west and the Far East on the one hand and India on the other. The regions covered by two great trade-routes from China, known as 'silk-routes', became the meeting ground of many different races, arts and languages, vibrating with Indian, Iranian, Hellenistic and Chinese thoughts, with Buddhism as the central theme. Sanskrit and Prakrit Buddhist literature written in the Indian script flourished in the land. Its rich pattern of economic and cultural life is amply illustrated in the Museum by its varied collections, such as terracottas and stuccos from *stūpas* and shrines, carved wooden pieces with Indian motifs, wooden documents in Kharoshṭhī characters of the first to the third centuries A.D., grave-furniture, coloured textiles, figured silk, woollen tapestries, articles of personal use and finally the frescocs and paintings on silk, wooden boards and paper depicting the cultural climax witnessed in Central Asia during the seventh to the tenth centuries.

C. The site-museums

(i) *Mohenjo-daro and Harappā*

The Museums at Mohenjo-daro in Sind and at Harappā in West Panjab, built during the excavations at these places (above, pp. 83 ff.), contain relics revealing the hoary past of India in the third and second millennia B.C., when the pre-Aryan people had a highly developed culture in the chalcolithic age. Following the Partition of India in 1947, both of them were transferred to Pakistan, but India has obtained a fairly representative collection of Indus objects, which is now being augmented by exploration within the borders of India.

(ii) *Taxila*

The collection of this attractive Museum (now in Pakistan), built near the site of excavations at Taxila (above, pp. 131 ff.), represents the cosmopolitan culture that flourished in the north-west of India for a period of about a thousand years beginning with the fifth century B.C. The Buddhist sculptures in stone and stucco in the Museum fully depict the history of the Gandhāra school of art, and the numerous other objects of domestic use illustrate the life of the people inhabiting the first two of the three cities of Taxila.

(iii) *Sārnāth*

Built in 1904 within a stone's throw of the ancient ruins of Sārnāth near Banaras (above, p. 142), the Sārnāth Museum illustrates some of the vital phases of India's art-history from the third century B.C. to the twelfth century A.D., which successively produced excellent examples of art as are represented by the lion-capital of the Mauryan period (pl. LXII A), the Buddha images of the Gupta period and sculptural pieces and other objects executed in the Śuṅga, Kushan and medieval periods. The exhibits are displayed in three large halls (pl. CXIX) in a building which is by far the best site-museum building in India after the loss of Taxila.

(iv) *Sānchī*

This small Museum, built in 1919 by the Archaeological Survey on behalf of Bhopal State to house the Buddhist antiquities recovered during the excavations at the site (above, p. 160), illustrates all the phases of central Indian history from the time of Aśoka down to A.D. 1200, as evidenced by images, fragments of architectural gateways and rail-pillars, relic-caskets, pottery, household and monastic utensils of iron, bronze and copper, terracottas and coins. Plans are afoot to provide additional space in the Museum, which has just now been taken over by the Department of Archaeology.

(v) *Amarāvatī*

The sculpture-shed at Amarāvatī, on the right bank of the Krishṇā river in Guntur District of Āndhra, contains only the remnants of a large collection of sculptures and architectural pieces (the bulk and the best preserved, including the early south Indian metal images, having been transferred to the Madras Museum and the British Museum) brought to light as a result of the discovery in 1797 of the remains of the Great Stūpa of Amarāvatī by Colin Mackenzie of the Trigonometrical Survey and the subsequent operations conducted till 1908-09 (above, p. 236). Amarāvatī, originally called Dhanakaṭaka, was famous as the eastern seat of the Sātavāhana monarchs (second century B.C. to second century A.D.), whose patronage, as also the great missionary influence of Nāgārjuna, the founder of the Mahāyāna school, and of his followers, were responsible for the large number of Buddhist *stūpas* in the Krishṇā valley. The sculptures of Amarāvatī, attributed to the centuries just before and after Christ, represent some important aspects of early Indian life and history in the south, and though the style is marked by its originality, some Gandhāran traits are discernible here and there.

(vi) *Nāgārjunakoṇḍā*

The small Museum at Nāgārjunakoṇḍā (named after Nāgārjuna, who is said to have spent the later part of his life in a monastery at this place) built on the site of the ruins on the right bank of the Krishṇā (above, p. 167), houses charming examples of bas-reliefs in the late phase of the Amarāvatī style belonging to the third-fourth centuries A.D. and depicting the leading scenes of the life of Buddha, Jātaka stories and representations of *stūpas*. The inscribed records in Brāhmī characters found here refer to the southern Ikshvāku dynasty of the second-third centuries A.D., when the principal sanctuaries of

Nāgārjunakoṇḍā were founded. It is interesting to note that the Ikshvāku kings followed Brahmanism while their consorts were devotees of Buddhism and erected monasteries and *stūpas* in honour of Buddha.

(vii) *Koṇḍāpur*

The Museum at Koṇḍāpur in Hyderabad State contains interesting relics associated with the history of the Āndhras (*circa* second century B.C. to third century A.D.), discovered there from the partial excavation conducted at the site in 1941 by the Hyderabad Archaeological Department. The culture represented here is almost similar to that in the other Āndhra sites found so far in the Deccan, viz., Brahmagiri, Chandravalli and Maski, and the antiquities comprise, among other objects, important pottery such as rouletted and russet-coloured wares datable to the first century A.D. (above, p. 163) and vessels of different types pointing to distinctive ceramic traditions, besides punch-marked and Sātavāhana coins and Buddhist figures made of kaolin forming a striking feature of the Āndhra culture in the Deccan.

(viii) *Nālandā*

Situated close to the ruins of the ancient Buddhist establishment in Patna District, the Museum contains remarkable sculptures in stone and bronze (pl. LXX) which represent the Pāla art of the medieval period and rank among the leading contemporary schools of art in northern India. Other important antiquities of the Museum are the sealings of the royalties of the Gupta and Maukhari dynasties, the official seals of the Nālandā monastery and important historical inscriptions discovered at Nālandā during the excavations conducted here from 1915-16 onwards (above, p. 148).

(ix) *Khajurāho*

The open-air museum built at Khajurāho in Chhatarpur State (now in Vindhya Pradesh) in 1910 by W. E. Jardine, the Political Agent in Bundelkhand, contains a wealth of sculptures and architectural pieces, mostly Hindu and Jaina, from the group of temples (dating from *circa* 950) of the Indo-Aryan style of architecture, of which the Kandariyā temple of Śiva alone contains on its walls no less than eight hundred figures. The vigorous plastic art of Khajurāho, though conventionalized, displays greater sophistication and sense of feelings and more complex profiles than that of contemporary Orissa, another centre of Indo-Aryan temples. The Chandellas, a Rajput tribe who ruled over Jejākabhukti (Bundelkhand) from the ninth to thirteenth centuries, have left such rich traditions in art and architecture as have given Khajurāho a place of distinction in the artistic history of northern India in the medieval period.

(x) *Hampi*

The proposed museum at Hampi in one of the buildings of the old ruins (pl. CXX), situated on the southern bank of the Tungabhadrā in Bellary District (above, p. 165) and representing the site of the capital of the great Hindu empire of Vijayanagara which reached its climax during the reign of Kṛishṇa-rāya (1509-1530), will illustrate the art-history of the Vijayanagara period, which left no insignificant mark on the cultural history

of south India during the fourteenth to the sixteenth century. While some of the architectural remains of Hampi indicate Saracenic features, the stone and metal images of this place partake of Jaina and Hindu characters, the latter being predominant owing to the patronage of the kings who built temples in honour of the great Hindu deities, Śiva and Vishṇu, and worshipped Virūpākasha (a form of Śiva) as their family-god. The worship of trees and snakes as well as the practice of *satī*-rites being very popular during the Vijayanagara period, these practices are also illustrated among the sculptures of Hampi.

(xi) *Red Fort, Delhi*

This Museum, situated in the Mumtāz Maḥal in the fort built by Shāh Jahān in the seventeenth century, originated from a municipal museum, which was set up in the Town Hall in 1868 by F. H. Cooper, Deputy Commissioner of Delhi, and existed for nearly forty years with a growing collection of curios. In 1902 Lord Curzon had the undefined character and neglected state of the museum referred to the Archaeological Survey. Accordingly, most of the undesirable objects were disposed of, and the Delhi Museum of Archaeology was founded in 1909 in the Naqqār Khāna of the fort (subsequently transferred to the Mumtāz Maḥal) with such collections of the original museum as were connected with the history of the Delhi Fort. Since then, its collection has been considerably augmented by fresh acquisitions of coins, portraits, manuscripts and inscriptions of the Sultanate and Mughul periods and other interesting objects, such as pictures relating to the Mutiny of 1857, ancient armours of Saracenic pattern, etc., either purchased or received as gifts.

(xii) *Fort St. George, Madras*

The Fort Museum, originally sponsored in 1946 by D. M. Reid of the Old Madras Guards for the exhibition of antiquities illustrating the historical evolution of the Province since the days of the East India Company in the eighteenth century, was organized by the Archaeological Survey and formally opened on the occasion of the fifth session of the Central Advisory Board of Archaeology held in Madras in February 1948. Housed in an ancient building which, since Wellesley's time, has been full of memories of the days of the East India Company, the collections of the Museum, including weapons of war either belonging to the East India Company or captured by them in their battles against the rival European powers and local rulers in the latter half of the seventeenth century, and other important objects, such as the East India Company's chinaware, colours of the King's Regiment and other British regiments disbanded from time to time, records of the St. Mary's Church, precious silverware, a picturesque model of Fort St. George and etchings of Daniel, etc., were received either as gifts or on loan from different sources. Further acquisitions are being made to make the Museum more representative in character and worthy of its purpose.

3. THE NATIONAL MUSEUM OF INDIA

By J. K. Roy

The Indian Museum of Calcutta is undoubtedly the principal museum in India, but it has never attained the status of a national museum in the modern sense of the term.

Proposals were set afoot as early as 1912-13 for the establishment of a national museum at Delhi, which, however, did not find favour with the British Government. In 1925 the proposal was reconsidered but had to be shelved for want of funds. Early in 1936 it formed an item in a five-year plan for the development of Delhi. In the same year, the Markham-Hargreaves Report stressed in no uncertain manner the need for a centralized museum, and in 1939 Sir Leonard Woolley stated in his report that national credit demanded the establishment of a national museum at Delhi. In 1944 the Royal Asiatic Society of Bengal again urged the establishment of a national museum, and a scheme for a Central Museum of Art, Archaeology and Anthropology was drawn up in 1945 by the Director General of Archaeology in India, which was approved by the Advisory Board of Archaeology and accepted in principle at an inter-departmental meeting. In August 1945 the scheme was approved by the Standing Advisory Committee of the Indian Legislature on Education, and the Government of India appointed a committee with Sir Maurice Gwyer as the chairman to examine the whole question for a detailed report, which was published in 1946. The scheme was agreed to by the Development Board, and the Government finally accepted it in 1947 with certain modifications proposed by the Central Advisory Board of Archaeology.

The exhibition of Indian art and archaeology held in London in 1947-48 (above, p. 242) was indirectly responsible for the formation of the nucleus of the National Museum. The entire collection sent out to London was brought to Delhi, and an exhibition sponsored by the Government was organized by the Department of Archaeology in the State Rooms of the Government House (now Rashtrapati Bhavan) towards the end of 1948 on an unprecedented scale, in which a number of sculptural masterpieces in bronze and stone and superb miniature paintings of different schools were brought together under one roof. The exhibition, for which a catalogue, an album of representative sculptures, paintings and textiles and picture-postcards of selected objects were printed, proved a grand success. It introduced a series of fourteen lectures by eminent scholars of the country, and the Films Division of the Government rendered a great service towards educational purposes by producing a documentary film of the principal contents of the collection. Immediately after the close of the exhibition, the National Museum idea gained more strength than ever before, and appeals by the Government to the owners of the exhibits for the extended loan of all the art-objects that had gone to London, having generally borne fruit, it was decided to make continued use of the State Rooms of the Government House for temporarily housing the National Museum. Accordingly, the nucleus of the National Museum of India was established in New Delhi (pls. CXXI and CXXII) and thrown open to the public after a formal opening on the 15th August 1949 by the Governor General of India. In its proposals the Gwyer Committee had envisaged three main stages, each with several phases, for being implemented over a number of years. These stages have since been partially altered to meet the needs of the time, and pending the construction of a suitable building for the National Museum in New Delhi, which is now receiving active attention, the scope of the present collection has been limited to art and archaeology, and the respective sections have been functioning with a skeleton staff under the Director General of Archaeology.

The Museum, which opened with a fairly representative collection of exhibits, has since been deprived of many of the masterpieces due to a very large number of the loaned objects having been withdrawn by the respective owners, but thanks to some rulers of the former Indian States, who have either made gifts or agreed to extended loans of excellent art-objects, besides a few State Museums and some private owners who have made a similar gesture, the loss, though still keenly felt, has been to some extent been repaired. The Department of Archaeology has, however, solidly stood by the National Museum by lending

suitable materials from the museums under its control. Acquisitions of valuable materials negotiated by the Art Purchase Committee set up by the Government of India have further enriched the Museum during recent years. The present collection of the Museum illustrates the Indus civilization; stone sculptures of different periods from the Mauryan to the medieval epoch; north Indian and south Indian bronzes; miniature paintings of various schools which flourished in different parts of the country at different times; textiles; and minor antiquities, including arms and weapons, jades, painted book-covers, illuminated manuscripts and the like. The collection, as a whole, presents even in its nucleus state a comprehensive picture of India's art and culture through the ages. Side by side with the growth of the National Museum, proposals for the setting up of the National Gallery of Modern Art in New Delhi having gained increasing support, the Jaipur House in New Delhi has been requisitioned by the Government, and the National Gallery of Modern Art has recently been established here with the modern materials from the National Museum and the collection of modern paintings acquired by the Government from time to time. Thus, the National Museum maintains today collections ranging in date up to the eighteenth century, the continuation of which appears in the National Gallery.

Since the inception of the National Museum, several temporary exhibitions of objects have been held here, the first of which, organized in February 1951, illustrated among others rare palm-leaf manuscripts, Jaina religious texts and books on Indian philosophy. Soon after was held an exhibition of Indonesian art, mainly illustrating the Wayang-repertory representing the legendary Javanese history, connected to some extent with the Indian religion. Later in the year, an exhibition bearing on religion and philosophy was organized on the occasion of the UNESCO Symposium on the 'Concept of Man' and the 'Philosophy of Education in the East and West', with an illustrated catalogue published for the occasion. Another exhibition was held in March 1952, illustrating Indian historical portraits from original paintings and photo-enlargements covering a wide period from the second century B.C. to the nineteenth century A.D. Then came an exhibition of Chinese art and archaeology, which was followed this year by another one, organized by the Swedish Archaeological Expedition in India in co-operation with the Department of Archaeology, in which the material from Rangmahal, Bikaner (above, p. 150), excavated by the Expedition was displayed.

Full-time guide-lecturers have been appointed for taking round interested visitors and giving talks four days in a week, both in English and Hindi. Besides, a twice-a-week programme of talks of previously announced subjects has become a regular feature of the educational activities of the Museum.

It will thus be apparent that the National Museum, though still in its infancy, has undoubtedly provided added interest to the cultural life of Delhi by illustrating the history of India's past in an audio-visual manner.

The Museum, with its present art and archaeological sections, has yet to begin its full career in its own building, to be constructed very shortly, so that the anthropology section can be added and all the sections that are to constitute the institution can have a natural and healthy growth. The National Museum has to discharge its two primary functions, viz., the diffusion of instruction and rational amusement among the mass of the people and to afford scientific students all possible means of examining and studying the specimens of the Museum. The first purpose cannot be served without popular lectures, film-shows, travelling exhibitions, etc.; the second objective cannot be fulfilled without a self-contained and growing library and a rich reserve-collection. The Museum has also to provide the means and inspiration in regard to technical assistance to the other museums

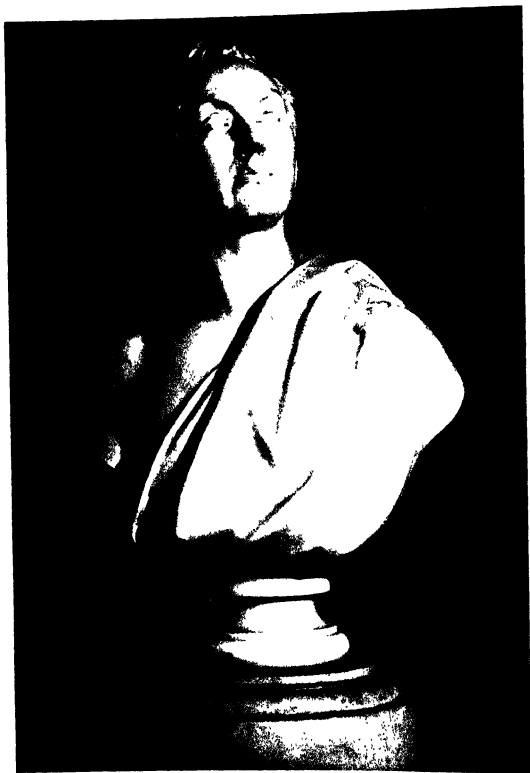
in the country and has also to act as a central lending agency by sparing its own treasures on loan to other museums, as is done by the Circulation Department of the Victoria and Albert Museum in South Kensington, London, to enable it to be of real service in the cultural uplift of the country. And thus can it march onwards to become a vital force as a great institution worthy of the nation.

Edited and published by the Director General of Archaeology in India, Government of India, New Delhi. Printed by M. C. Khunnah, B.Sc. (Engg.) at the Job Press Ltd., Kanpur.

... furnish me with proper topicks of enquiry. I can only
wish for information, and hope that a Mind comprehen-
sive like yours will find leisure amidst the cares of your
important Station to enquire into many subjects of which
the European world either thinks not at all, or thinks with
deficient intelligence and uncertain conjecture. I shall
hope that he who once intended to encrease the learn-
ing of this country by the introduction of the Persian Lan-
guage, will examine nicely the Traditions and Histories of the
East, that he will survey the remains of its ancient
Edifices, and trace the vestiges of its ruined cities; and
that at his return we shall know the arts and opinio-
ns of a Race of Men from whom very little has been hi-
therto derived.

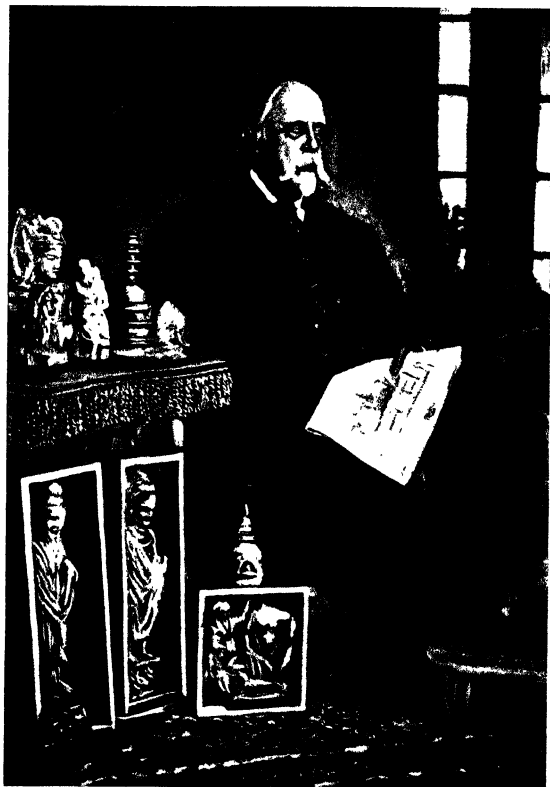
Extract from a letter dated the 30th March 1771 from Dr. Samuel Johnson to Warren Hastings. British Museum Additional Manuscripts, no. 29196. *See page 4.* Courtesy National Archives of India

'...I can only wish for information, and hope that a mind comprehensive like yours will find leisure amidst the cares of your important station to enquire into many subjects of which the European world either thinks not at all, or thinks with deficient intelligence and uncertain conjecture. I shall hope that he who once intended to increase the learning of his country by the introduction of the Persian language, will examine nicely the tradition and histories of the East, that he will survey the remains of its ancient Edifices, and trace the vestiges of its ruined cities; and that at his return we shall know the arts and opinions of a race of men from whom very little has been hitherto derived.'

PLATE II

Bust of James Prinsep (1799-1840) in the Asiatic Society, Calcutta

Alexander Cunningham (1814-93)

PLATE IV

73

Camp Kasheepore 12th December 1862.

To
Colonel R. Strachey
Secy to Govt. of India PWD

Sir,

I have the honor to submit a statement of my occupations during the month of November 1862 — You will observe that I have been fortunate enough to discover the ancient city of Ahichhatra — which is one of the most celebrated places in early Indian history — It is mentioned by Ptolemy as Αδισαδρα.

I have the honor to be,
Sir,
Your most obedient Servant
A Cunningham Major Genl
Archaeol. Surveyor
to the Govt of India

Letter of Alexander Cunningham to Colonel R. Strachey. *See page 11* Courtesy National Archives of India

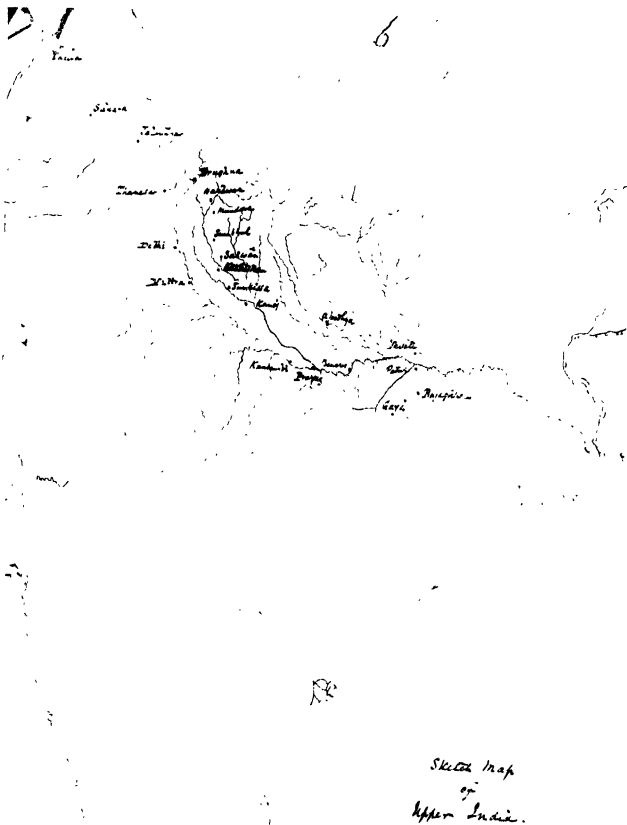



PLATE VI

Archaeological map of northern India by Alexander Cunningham. *See page 11.* Courtesy National Archives of India

John Marshall (born 1876)

PLATE VIII

Aurel Stein (1862-1943)

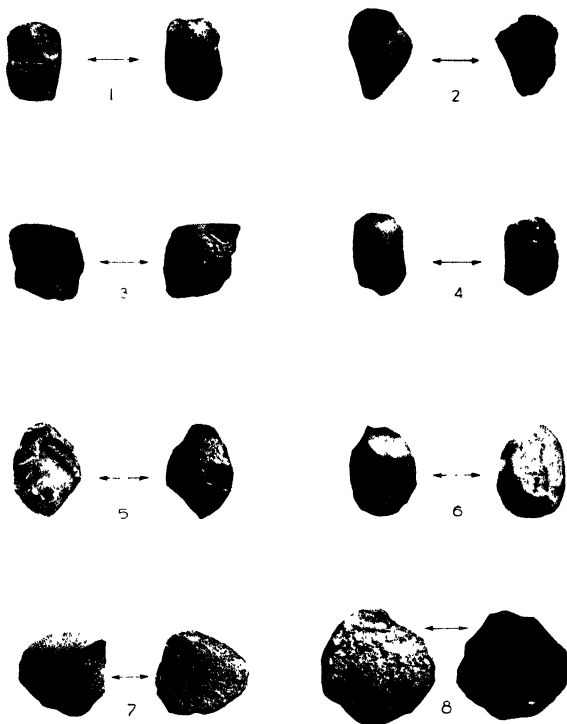
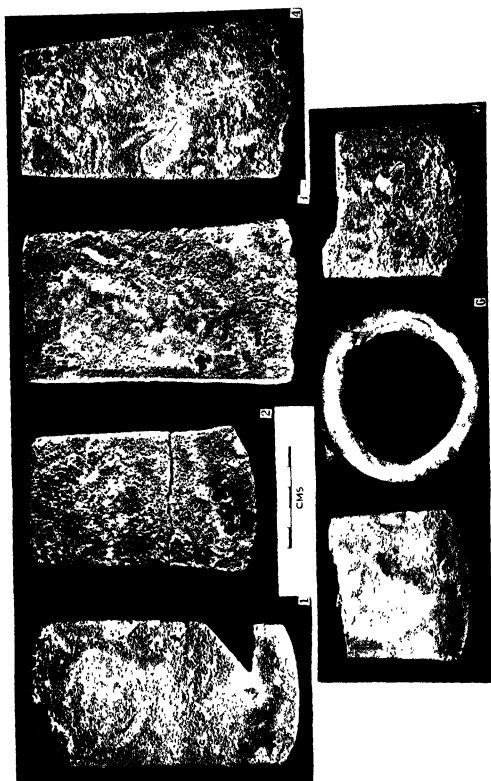



PLATE X

Implements from a Sohan site in the Sutlej basin in Nālāgarh, PEPSU: 1-4, Early Sohan flakes; 5-8, Late Sohan choppers. *See page 62.* Courtesy Olaf Prufer

PLATE XI

Copper flat axes and bangle from Jorwe, Ahmadnagar. See pages 67 and 99. Courtesy H. D. Sankalia

Microliths from the excavation at Bahal. *See page 68*

PLATE XIII

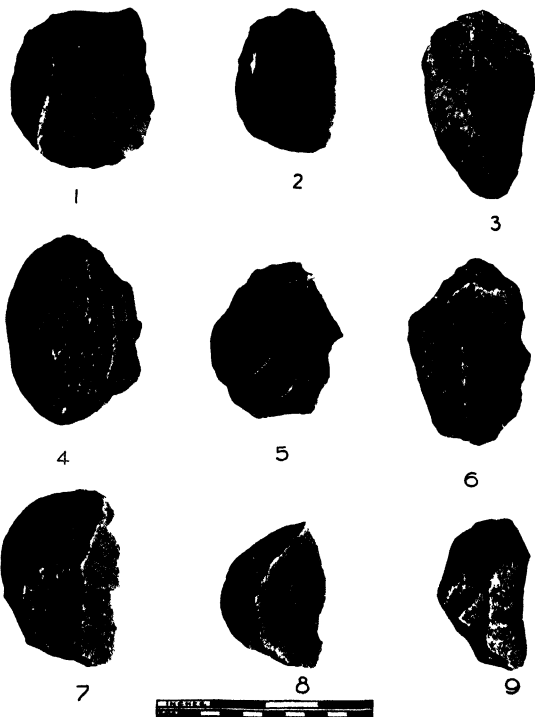
Copper objects from the excavation at Bahal. *See page 68*

Bahādarabād lithic industry: 1-3, flakes, 4-6, choppers; 7-9, mammoth lunates (cleaver-choppers).
See page 71

PLATE XV

A

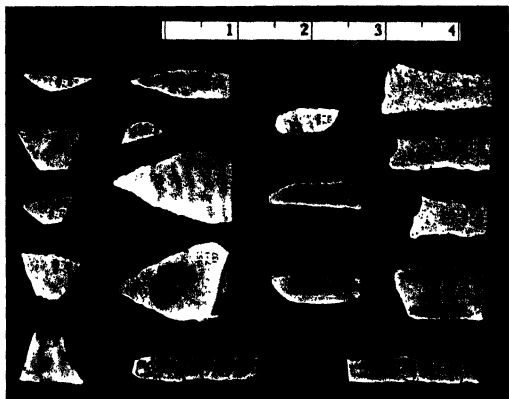
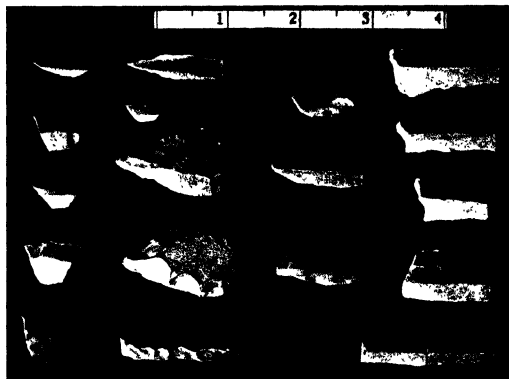
B

Microliths from a site near Karachi: A, obverse, B, reverse. See pages 64 and 82

PLATE XVIII

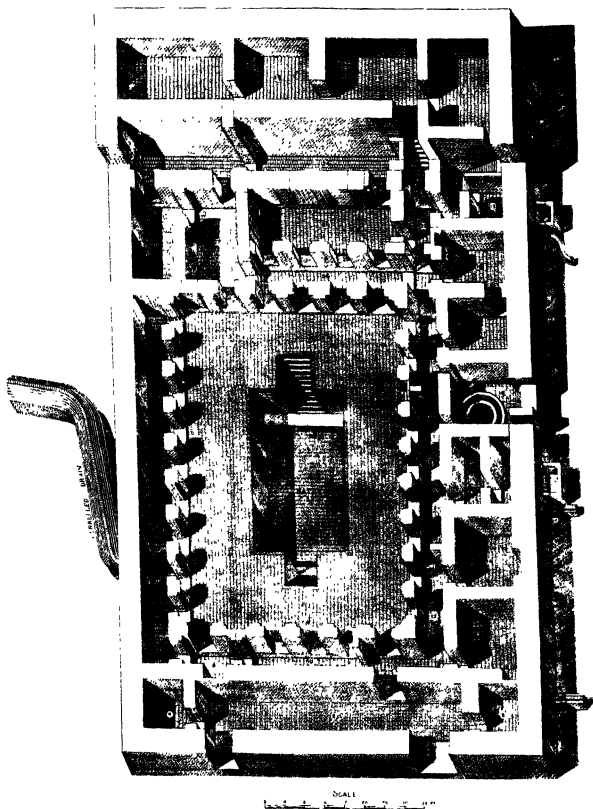
Mohenjo-daro, air-view of a part of the excavated remains. See page 84

Mohenjo-daro: isometric projection of the Great Bath. *See page 84*

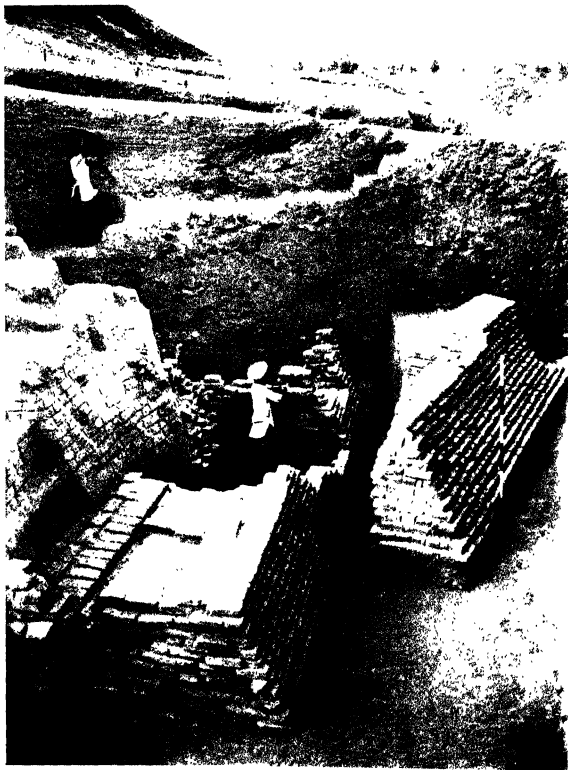
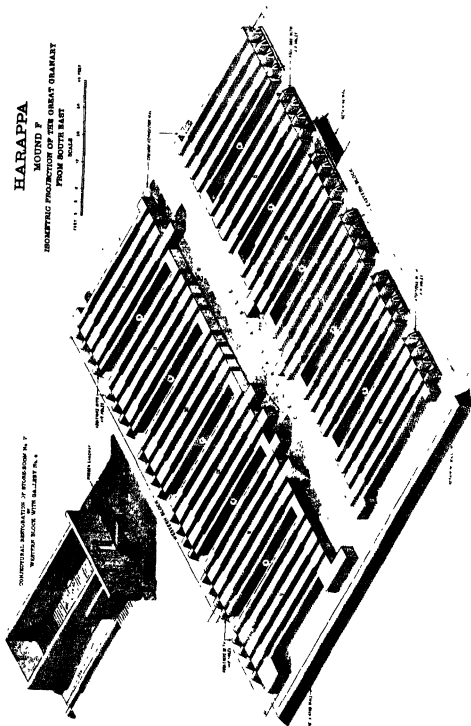
PLATE XX

Harappā: mud-brick defensive wall with burnt-brick revetments of three periods. *See page 84*

PLATE XXI

Harappā: a gateway (subsequently blocked up) on the western side of the citadel. *See page 84*

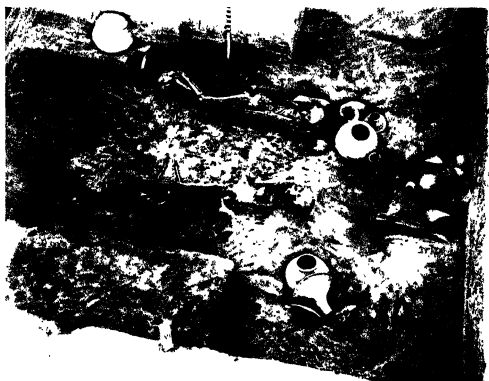
PLATE XXII

HARAPPA
MOUND F
ISOMETRIC PROJECTION OF THE GREAT GRANARY
FROM SOUTH EAST
SCALE
CONJECTURAL RESTORATION OF STORE-ROOM No. V
OF
WESTERN BLOCK WITH GALLERY No. 6
WESTERN BLOCK
EASTERN BLOCK

A. *Mohenjo-daro, steatite statuette.* *See pages 84 and 85*

B. *Harappā: sandstone statuette.* *See page 85*

C. *Mohenjo-daro: bronze dancing girl.* *See pages 84 and 85*

PLATE XXIV

1-3 and 5, steatite seals from Mohenjo-daro; 4, cylinder seal with its impression (Nagpur Museum, courtesy S. S. Patwardhan). See pages 85, 87 and 101

A. *Harappā: burials at cemetery R 37.* *See page 85*

B. *Harappā: urn-burial at cemetery H.* *See page 88*

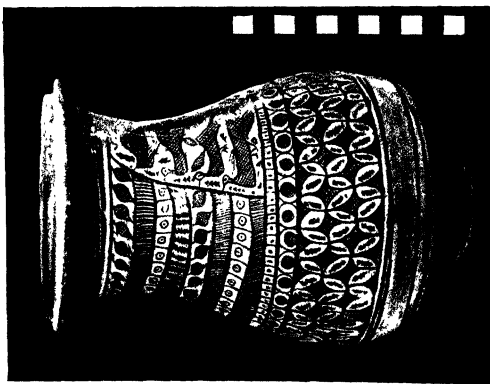



PLATE XXVI

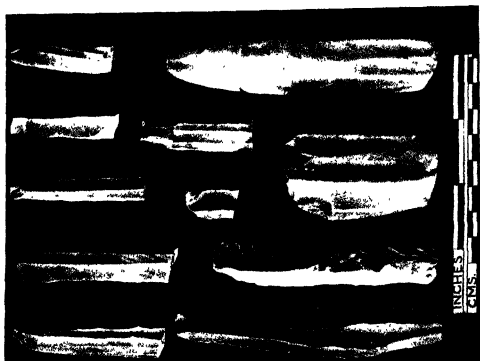
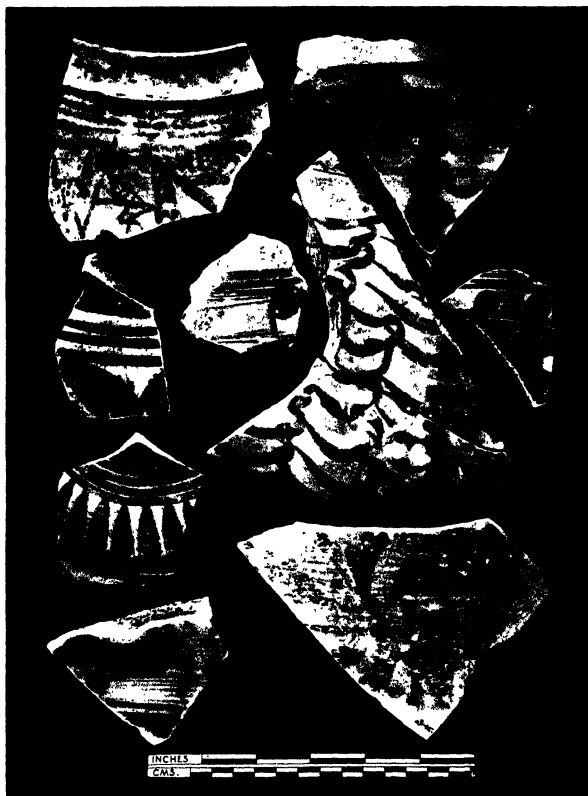
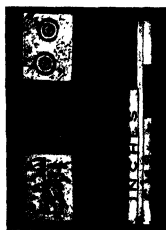
A. *Harappā painted pot from cemetery R 37.* See page 87

B. *Harappā chert blades and cores.* See page 87

Harappā ware from sites in Bikaner. *See page 81*

PLATE XXVIII

A. *Steatite seal from Tarkhānewālā-dera Bikaner. See page 81*

B. *Steatite seal from Rupar. See page 81*

C. *Chert blades from Harappā sites in Bikaner. See page 81*

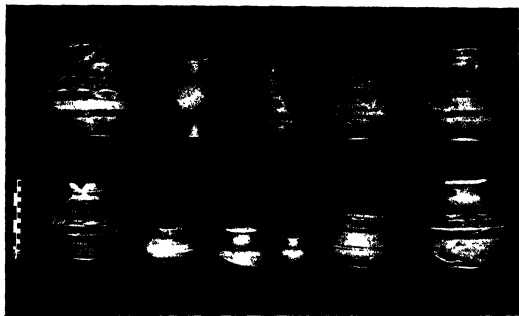



PLATE XXIX

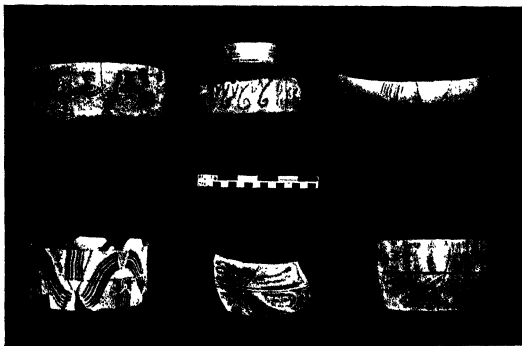
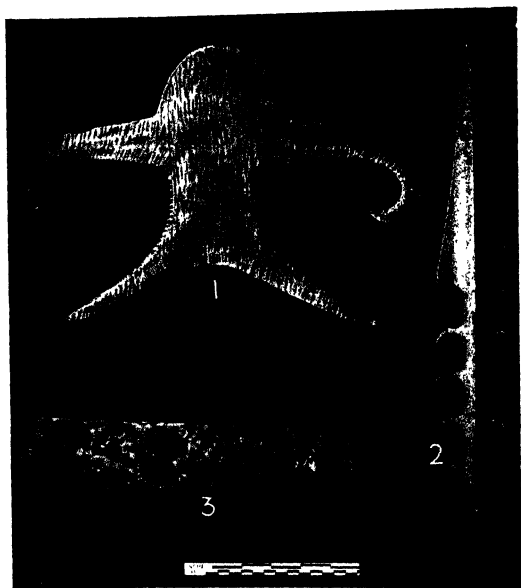
A. *Rupar: Harappā ware. See pages 81 and 96*

B. *Rupar: Painted Grey Ware. See page 96*

PLATE XXX

Bisauli copper objects: 1, 'anthropomorphic' figure, 2, harpoon; 3, longish celt. *See page 91*

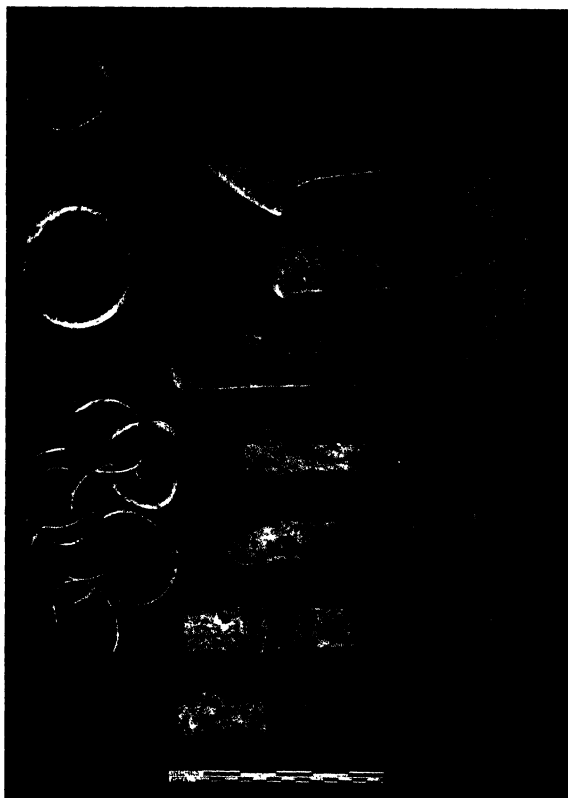



PLATE XXXI

Bahādarābād: copper sword or spear-head, axes and rings. See pages 71 and 91

PLATE XXXII

Hastināpura, general view of one of the excavated trenches (HST 1). *See page 93*

Hastināpura: erosion-line (pointed out by the man) in HST 1 left by a flood after Period II, above, a wall of Period III built on an uneven ground. *See page 95*

PLATE XXXVI

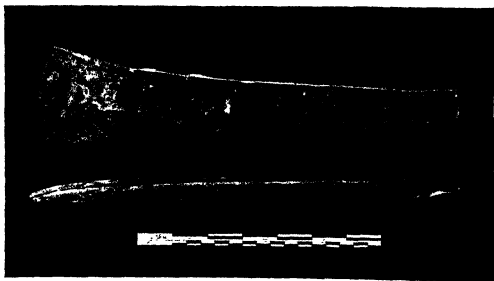
A. *Stone 'bar-celt' from Ban Tshunā, West Bengal. See page 98*

B. *Copper 'bar-celt' from Gungeriā, Madhya Pradesh. See page 98*

PLATE XXXVIII

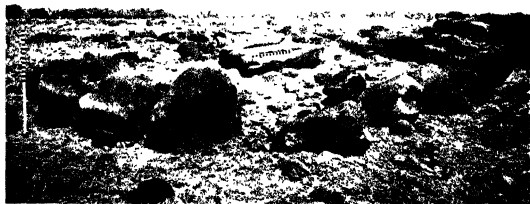
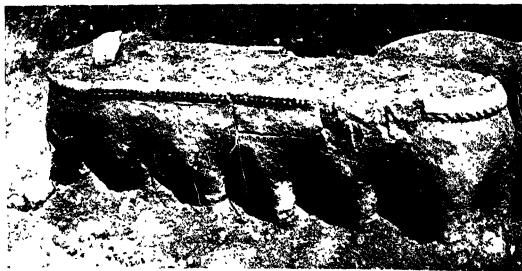
A *Cairn-circle at Mādaeilāgam, near Madurāntakam, Chingleput District* *See page 105*

B *Dolmenoid cist at Vaivāvur, near Madurāntakam, Chingleput District* *See page 105*

PLATE XXXIX

A. *Pyriform urns at Amirthamangalam, near Satyavedu Chingleput District.*
See pages 105 and 111

B. *Legged terracotta sarcophagus at Pallāvaram Chingleput District. See page 105*

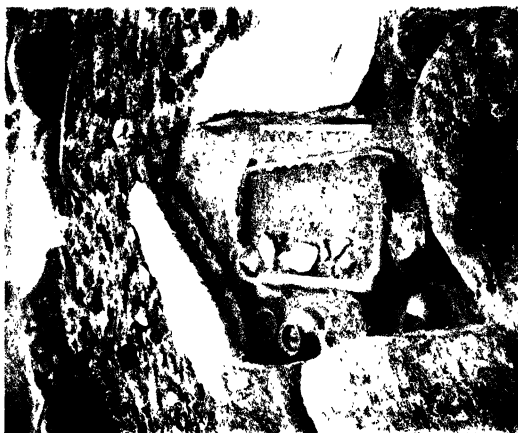
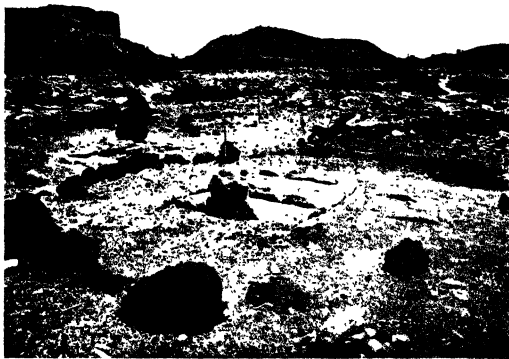



PLATE XL

A. *Sarcophagus within dolmenoid cist at Kā[illegible]ānur, near Madurāntakam, Chingleput District.* *See page 105*

B. *Menhir at Anapāra (Villadam), near Trichur, Cochin.* *See page 106*

PLATE XLI

A. *Transepted cist with ante-chamber at Tayinipatti, Pudukkottai* *See page 106*

B *Transepted cist showing internal features at Śittannavāsal Pudukkottai* *See page 106*

A *Hood-stone at Cheramanangād, near Eyyāl, Cochin* *See page 106*

B *Multiple hood-stone enclosed by a circle at Cheramanangād, near Eyyāl, Cochin.* *See page 106*

PLATE XLIII

Multiple-chambered subterranean rock-cut cave at Kattakampal near Kunnamkulam, Cochin. *See page 107.*

PLATE XLIV

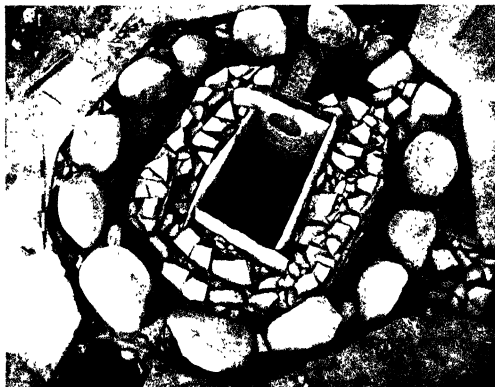
A *Topikallu at Cheramanangad, near Eyyal, Cochin* *See page 106*

B *Typical port-holed cist at Brahmagiri, Chitaldrug District, after excavation.* *See page 107*

PLATE XLV

A. *Dolmenoid cist with double circle at Śānūr, near Madurāntakam, Chingleput District, during excavation.* *See page 108*

B. *Cairn-circle at Śānūr, near Madurāntakam, Chingleput District, before excavation.* *See page 108*

Dolmenoid cist with earthen sarcophagi at Sānūr, near Madurāntakam, Chingleput District

See page 108

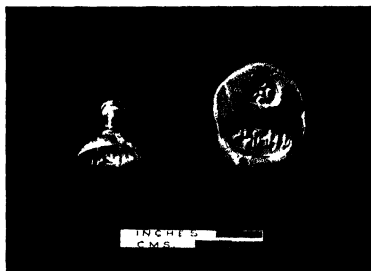
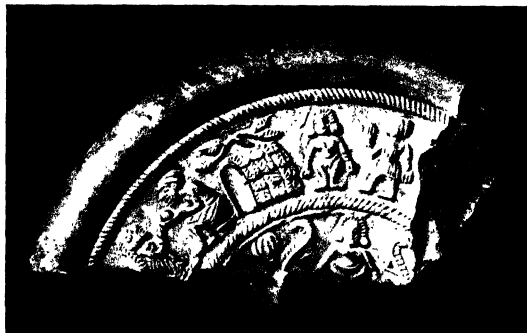
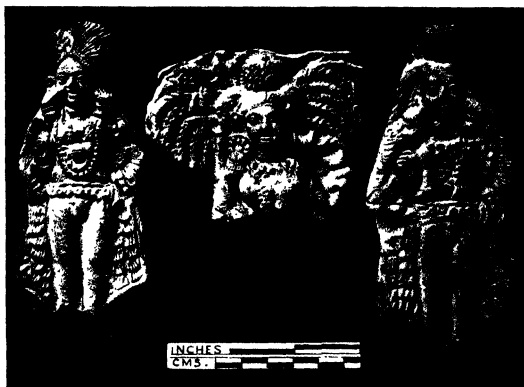
Rupar, structures of the early centuries of the Christian era (Period IV). *See page 126*

A. *Rupar, Period III: inscribed ivory seal with its impression. See page 123*

B. *Rupar, Period III: carved ring-stone. See page 123*

PLATE XLIX

A. *Rupar, Period III: curved portion of the enclosure-wall of a tank.* *See page 126.*

B. *Rupar, Period III: a series of ringed soak-wells.* *See page 126.*

A. *Rupar, Period IV: terracottas in Śunga style.* *See page 126*

B. *Rupar, Period II: terracotta figure of a lady playing on lyre.* *See page 126*

PLATE LI

PLATE LII

Bhir mound, Taxila, as laid bare in 1944-45. See page 154

PLATE LIII

Air-view of Sirkap, Taxila. A, *north-east corner-bastion*. B, *trench of 1944-45. See page 131*

PLATE LIV

Sirkap. Taxila, general view. *See page 134*

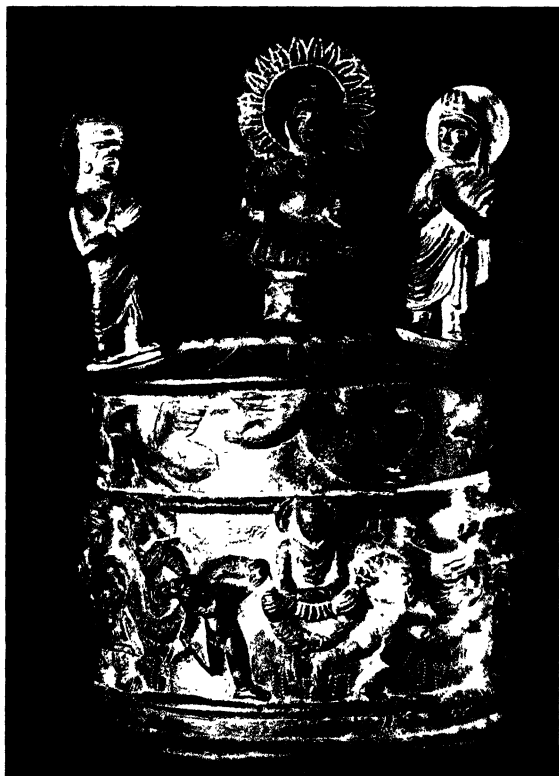
PLATE LV

Relic-casket of Kanishka from the stupa at Shahji-ki-Dheri, now in the Peshawar Museum.
See pages 136 and 237

PLATE LVII

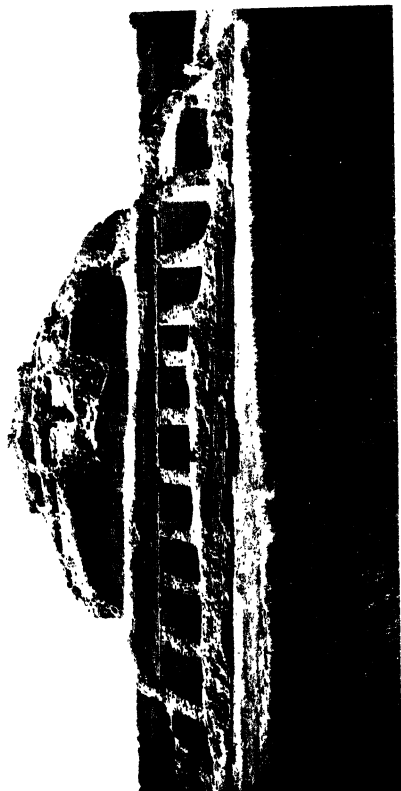
PLATE LVIII

Ahichchhatrā: general view of the structures of the later Periods, temple-complex of Period VII in upper middle ground. See page 140

PLATE LIX

A

C

B

PLATE LX

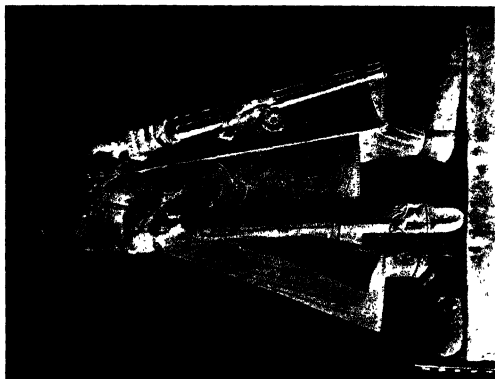
A. *Mathurā, inscribed image of Bodhisattva from Katrā Mound. See page 141*

B. *Mathurā: inscribed statue of Kanishka. See pages 141 and 237*

PLATE LXII

A. *Sārnāth · Lion-capital of Aśoka.*
See pages 143 and 244

B. *Sārnāth · Dhamekh Stūpa. See page 143*

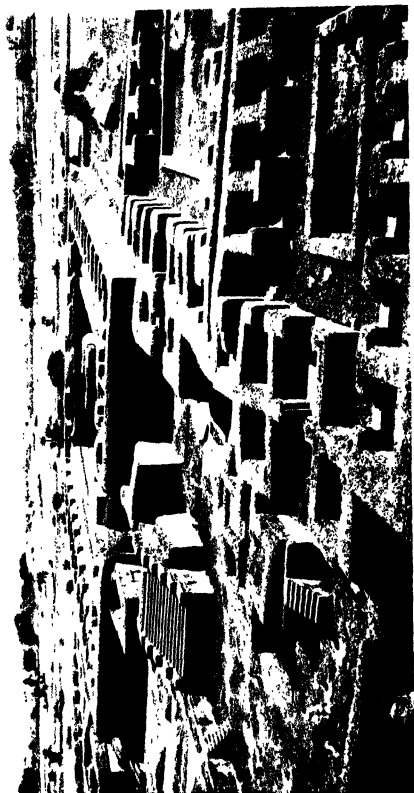
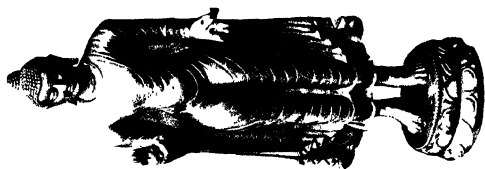
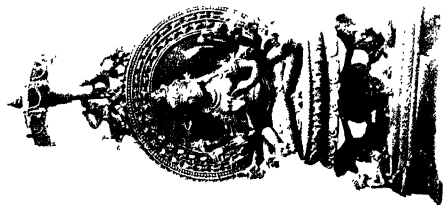
PLATE LXIII

Rajgir: fortification-wall at the top of hills. *See page 111*

PLATE LXIV

Kauśāmbī the Ghoṣitārāma monastery-complex *See page 146.* Courtesy G. R. Sharma

PLATE LXV

Kumrāhār, Patna, part of a monastic building of the Śunga period. *See page 117.*
Courtesy Vijayakanta Mishra

A

B

Kumrāhār, Patna. Terracottas of the Gupta period. See page 147. Courtesy Vijayakanta Mishra

PLATE LXIX

PLATE LXXI

A

B

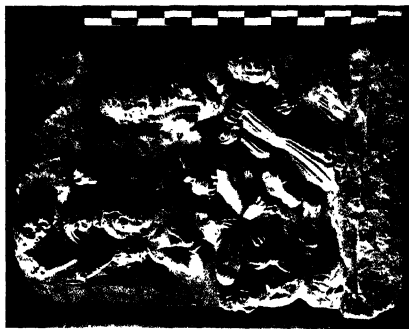
Terracotta plaques from Rangmahal, Bikaner, Gupta period. A, *Śiva and Pārvatī*; B, *a rural scene. See page 150*

Rer, Bikaner: excavated section showing A, the 'Rangmahal' levels, and B the Painted Grey Ware levels. *See pages 96 and 150*

PLATE LXXIII

A. *Pahārpur stone image of Balarāma. See page 157*

B. *Pahārpur stone image of Yamunā. See page 157*

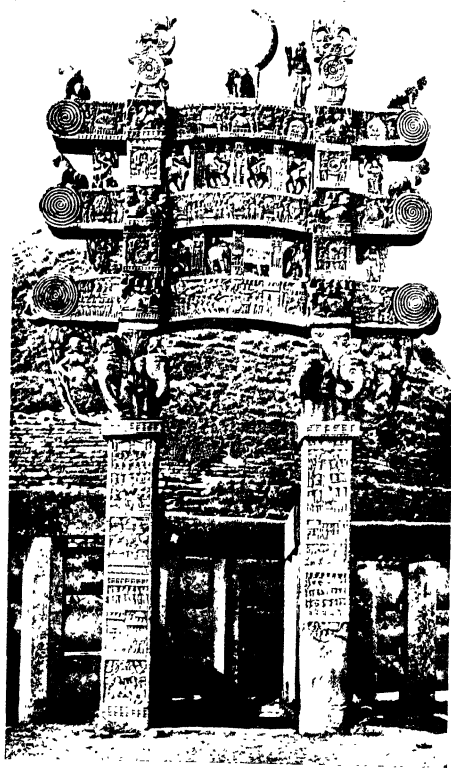
PLATE LXXVII

Sānchi Great Stupa details of eastern gateway. *See page 160*

PLATE LXXVIII

Amreli: excavated remains. *See page 162*

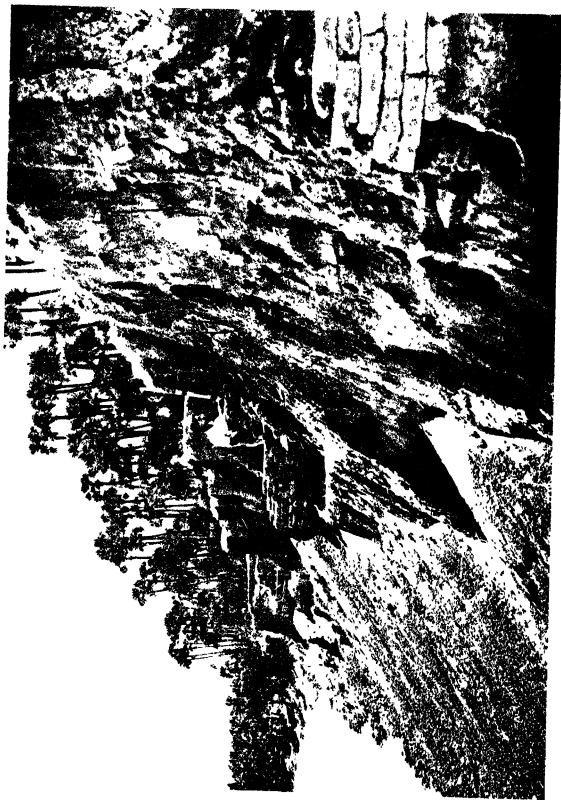



PLATE LXXIX

Anbanadh — walls projecting from river-sand. *See page 167*

PLATE LXXX

Arikamedu: remains of an ancient tank. See page 165

PLATE LXXXI

PLATE LXXXII

Nāgārjunakoṇḍā: excavated remains of a monastery. See page 167

PLATE LXXXIII

Śiśupālgaṛh excavated monumental bases. See page 168

PLATE LXXXIV

Śiśupālgarh: excavated remains of western gateway. See page 168

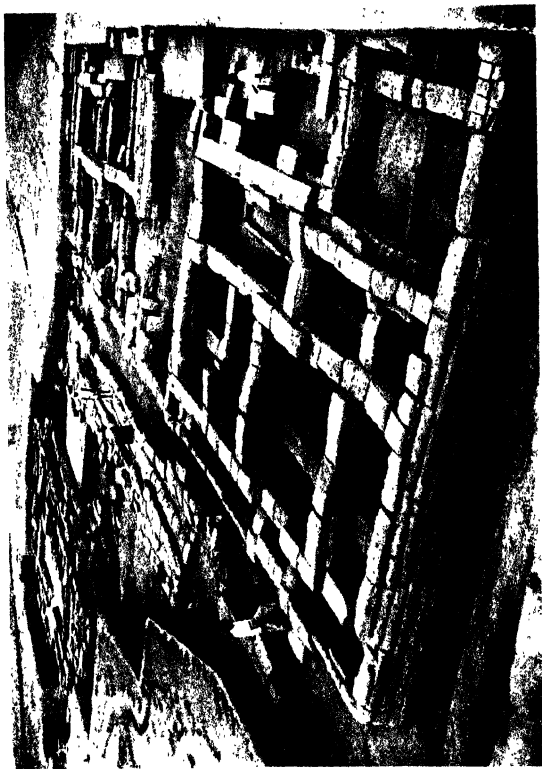
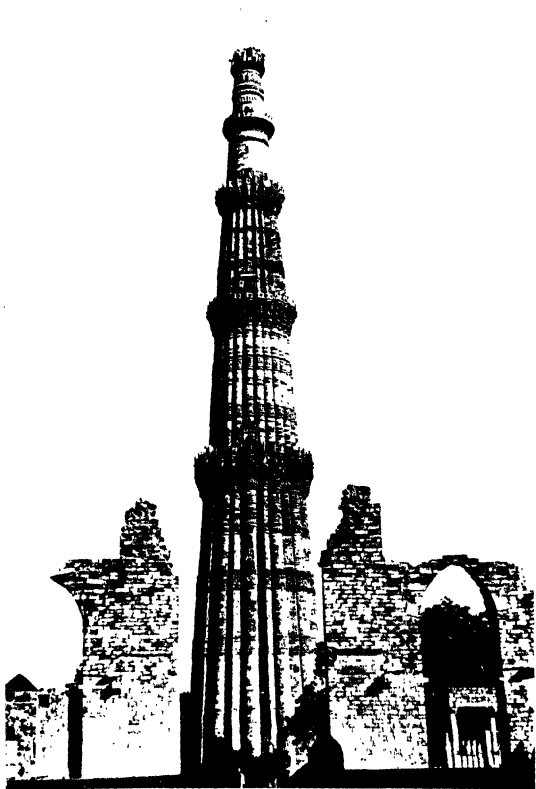



PLATE LXXXV

Quṭb Mīnār, Delhi. *See page 182*

PLATE LXXXVI

Sun temple, Konārak. *See pages 186 and 203*

Shore temple, Mahābalipuram. *See page 188*

PLATE LXXXVIII

Gangtok. See page 180

PLATE LXXXIX

Bṛhadīśvara temple, Tanjore. *See page 189*

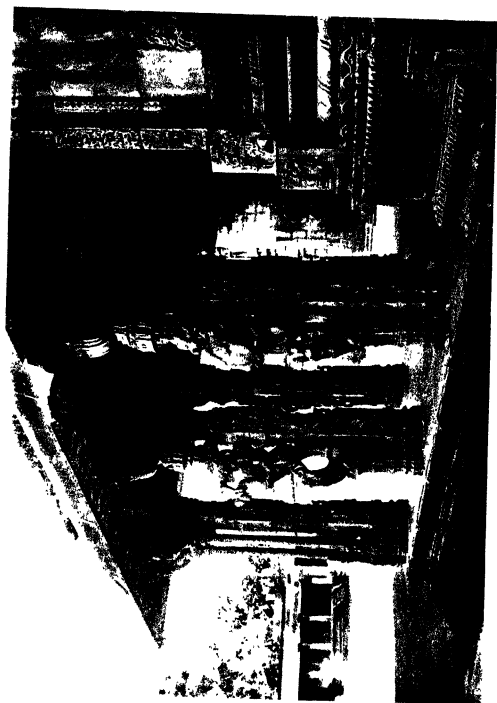



PLATE XC

Kalyāna-mandapa of the Jalakanteśvara temple, Vellore. *See page 190*

PLATE XCI

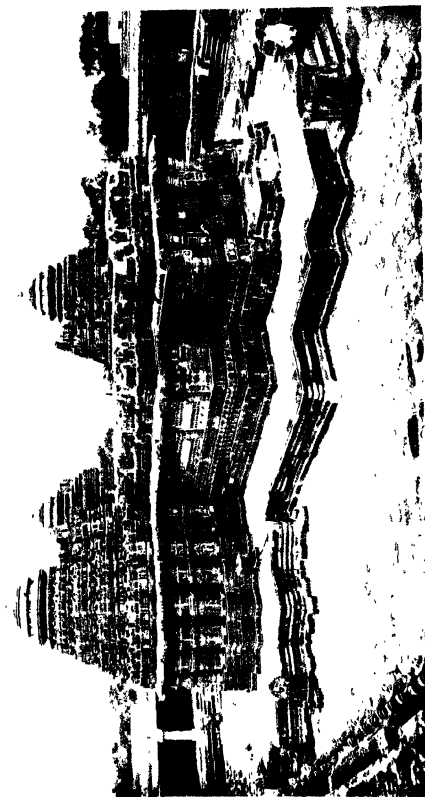
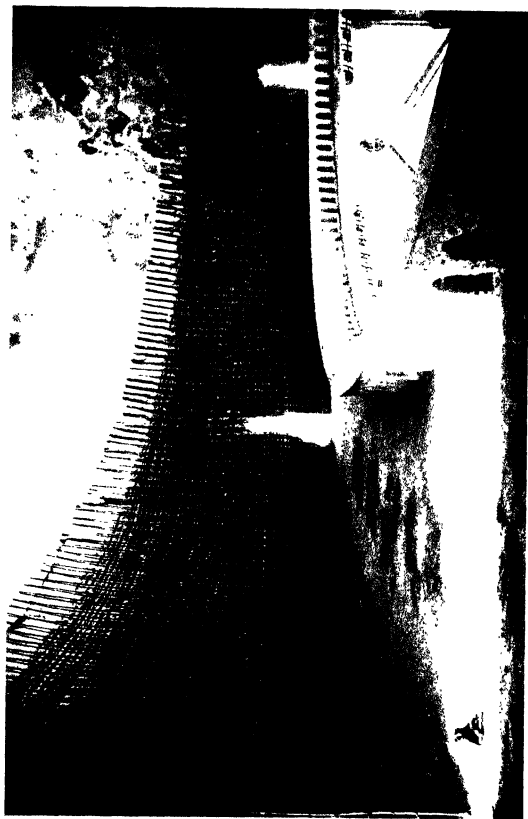
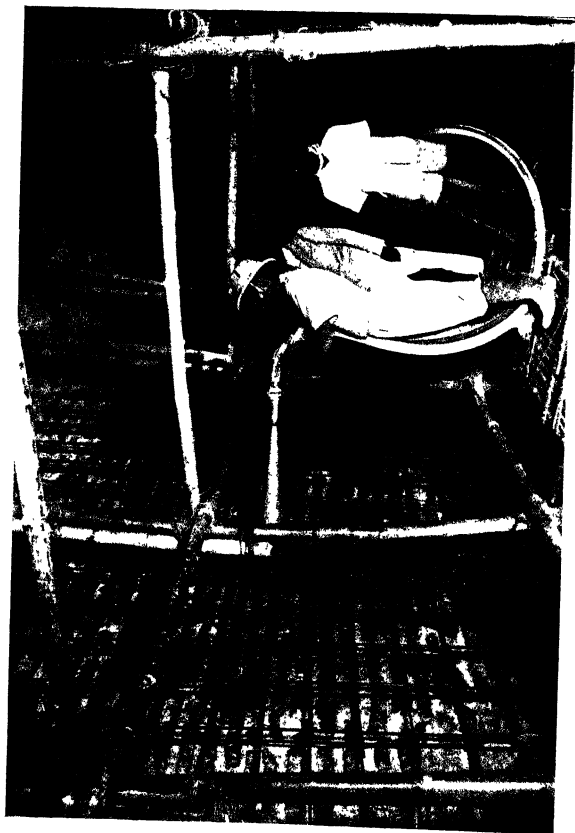
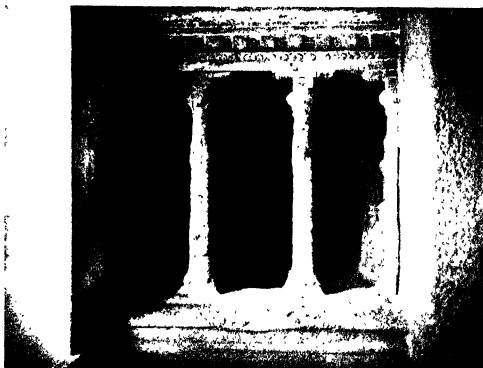
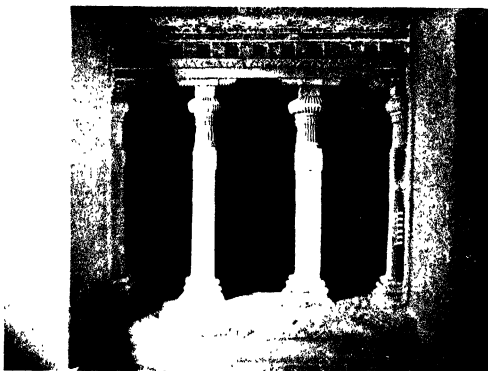
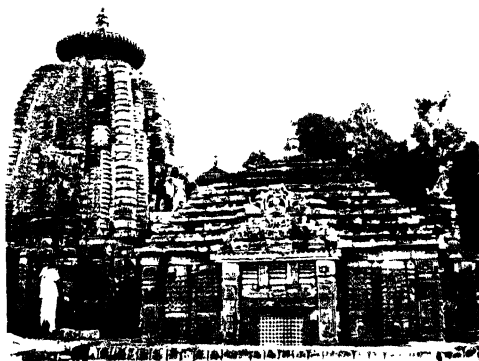
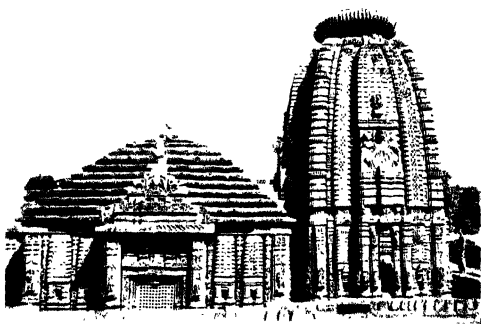
PLATE XCII

Gol Gumbad, Bijāpur, guniting in progress. *See page 194*

PLATE XCIII

A

B

Rock-cut cave, Kanheri: A, before preservation, and B after preservation. *See page 195*

A

B

Mukteśvara temple, Bhuvaneswar. A, before, and B, after preservation. *See page 203*

PLATE XCVII

Mahakali temple, Chanda: panel of mural painting, the left half showing the result of chemical treatment. *See page 201*

PLATE XCIX

Brihadīśvara temple, Tanjore: Chola painting after treatment. *See page 205*

Bṛhadīśvara temple, Tanjore panel showing two layers of paintings.
See page 205

PLATE CIII

1 and 2, steatite seals, Mohenjo-daro, 3-6, clay seals, Nālandā, 7 bronze seal of Devapala Nalandā plate 8, bronze seal of Gandarāditya, Kolhāpur plate. *See pages 210 and 211*

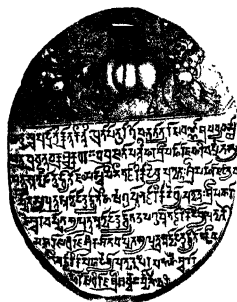
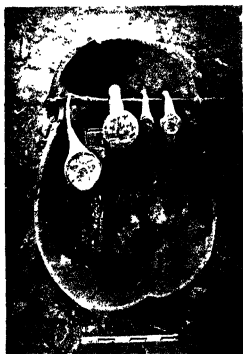
PLATE CV

Bronze seals 1, of Śarvavarman, Asirgarh; 2, of Daṇḍimahādevī, Ambapua plate; 3, of Dharmapala Khonāmukh plates; 4 of Rajendra I Karandai plates *See page 212*

1 and 2, pot containing copper plates, Andhāvaram; 3, a set of the Andhāvaram plates with the ring and seal. *See page 218*

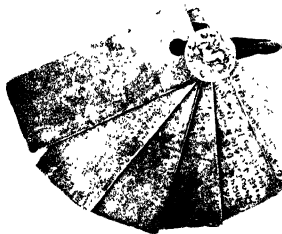
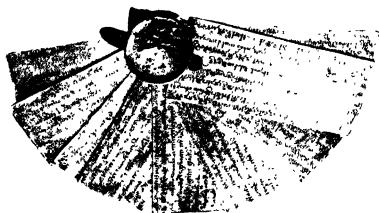
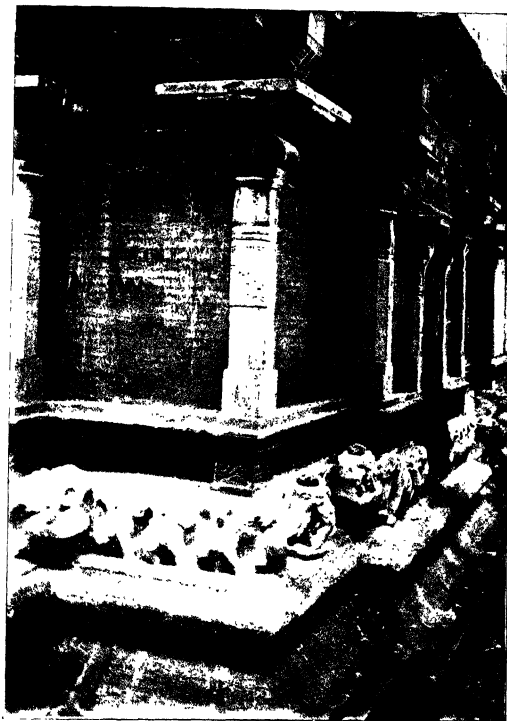
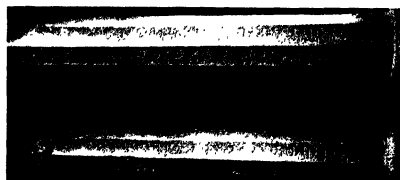
PLATE CVII

1. Tipperah plate of Lokanatha, 2. Udayendiram plates of Hastimalla, 3. Pullur plates of Nandivarman II *See page 218*

PLATE CVIII

Inscriptions on walls etc. of the Sapta-rishīśvara temple, Lālguḍi. *See page 217*

1, inscribed sculpture, Mathura. 2, inscribed Nāga, Banavāsi. 3, inscribed vīrakkal (hero-stone), Tiruparāntakam. 4, inscribed stone pillar, Śravaṇabelgola. See pages 212 and 217

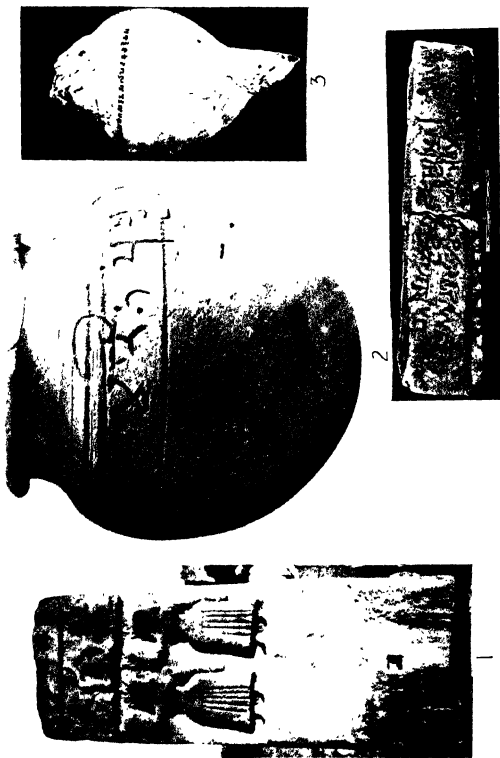



PLATE CXI

2

1

PLATE CXII

1. sati-stone Devagiri. 2. inscribed pot Vadgaon. 3. inscribed conch, Śālihundam. 4. inscribed brick, Jagatgrām. See pages 212 and 217

PLATE CXIV

A

B

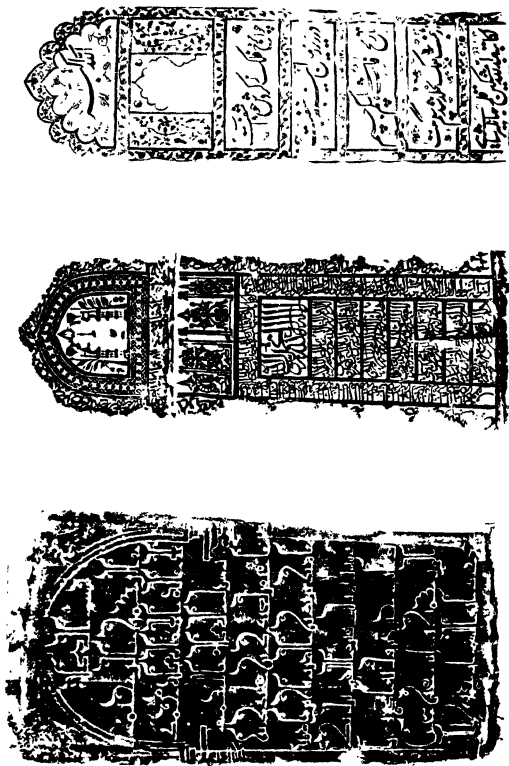
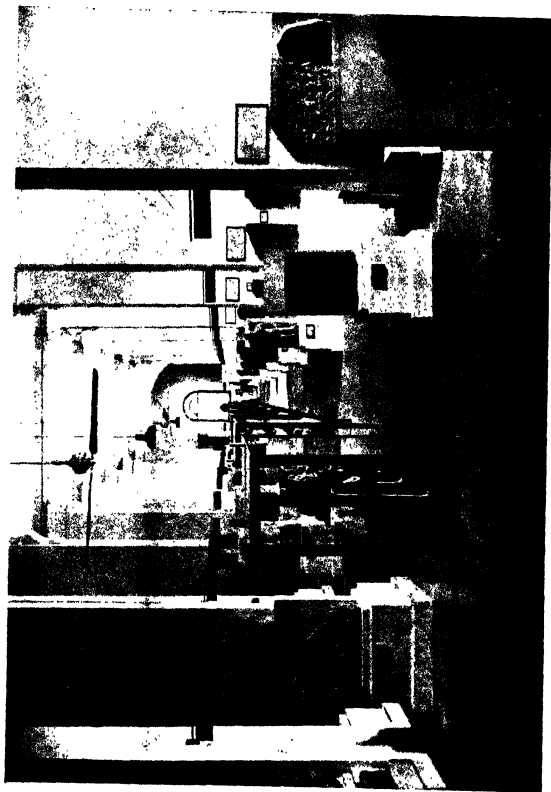
C

Specimens of calligraphy in Arabic and Persian inscriptions. A. ornamental Tughrā in the Indian Museum. B. Nasta'līq from Sonepat. C. Naskh from Bihār Sharīf, now in the Indian Museum. See pages 228 and 229

Indian Museum, sculpture-gallery. *See page 236*

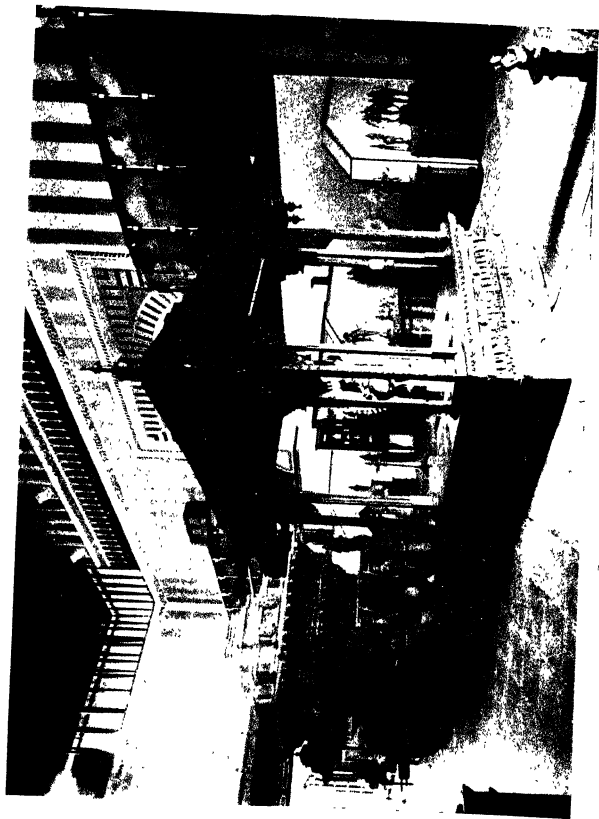
PLATE CXVII

Trivandrum Museum, archaeological section. See page 234

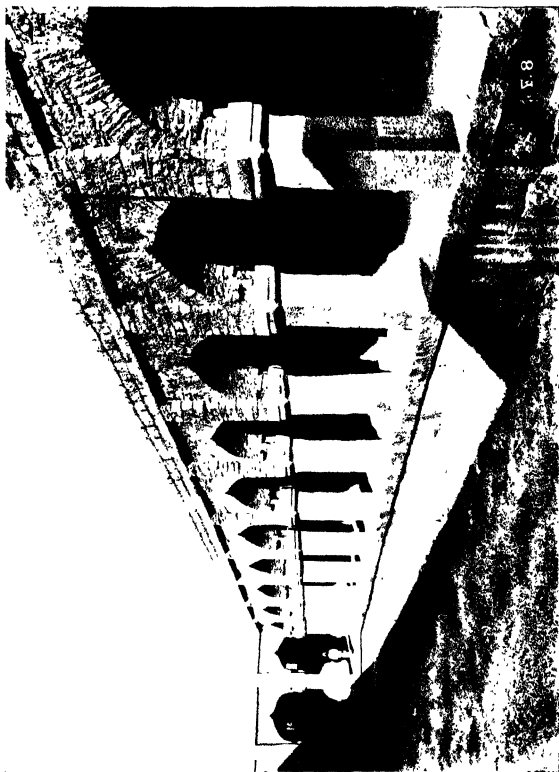
PLATE CXIX

'Guard' Room, Hampi, now housing the local museum. *See page* 245

PLATE CXXI

PLATE CXXII

National Museum, bronze-room. *See page 247*